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ABSTRACT

This report presents estimates of the total number of positions filled by scientists, engineers, and technicians employed in manufacturing industries in 1992. The estimates were developed from the Occupational Employment Statistics (OES) Survey, a Federal/State program under which national and state estimates are generated, of employment by industry for nonfarm wage and salary workers. Tables listed include: (1) Scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries; (2) Scientists in manufacturing industries; (3) Engineers in manufacturing industries; (4) Technicians in manufacturing industries; (5) Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error; (6) R&D scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries; (7) R&D scientists in manufacturing industries; (8) R&D engineers in manufacturing industries; (9) R&D technicians in manufacturing industries; and (10) R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error. (JRH)

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1992

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Detailed Statistical Tables

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National Science Foundation NSF 95-311

Scientists, Engineers, and Technicians in Manufacturing Industries

1992

Detailed Statistical Tables

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Directorate for Social, Behavioral and Economic Sciences
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GENERAL NOTES

In this report, estimates are presented of the total number of positions filled by scientists, engineers, and technicians employed in manufacturing industries in 1992. The estimates were developed from the Occupational Employment Statistics (OES) Survey, a Federal/State program under which national and State estimates are generated of employment by industry for nonfarm wage and salary workers. The Bureau of Labor Statistics (BLS) of the U.S. Department of Labor has primary responsibility for developing OES survey procedures and for providing States with technical guidance and assistance with survey problems. State Employment Security Agencies implement the survey at the State level and prepare current and projected employment statistics for these labor markets. Some States also prepare substate estimates.

The National Science Foundation has enhanced the BLS effort since 1977 by financing the collection of detailed estimates on the types of scientific and technical jobs filled by industry. Analysis of this information yields insight into the dynamics of the labor market.

Industries identified in the tables of this report are from the "Numerical List of Short Titles" in the *Standard Industrial Classification (SIC) Manual*, revised edition. The numbers of scientists, engineers, and technicians for a few industries at the 2-digit SIC level (tables A-2, A-3, A-4, A-7, A-8, and A-9) in this 1992 edition, as well as in the 1989 edition, differ from those in the prior (1986) report on manufacturing industries because a number of industries or subindustries were newly created, merged into other industries, or deleted as a result of 1987 SIC revisions. Starting with the 1989 edition greater noncomparability occurred at the 3-digit level of detail (tables A-1, A-5, A-6, and A-10) because of these revisions. However, the numerous industry title changes did not affect the comparability of the 1989 and 1986 occupational estimates for total manufacturing.

For the reasons outlined above, estimates in the tables of this 1992 report and the 1989 report should be compared with those for 1986 (and earlier years) only after consulting the 1987 SIC revisions to determine industry comparability.

Requests for previously published data and additional information should be directed to

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TECHNICAL Notes

GENERAL

National estimates of occupational employment in the scientific, technical, and engineering fields for manufacturing, hospitals, and agricultural services were based on data from the 1992 Occupational Employment Statistics (OES) Survey. The OES Program is a Federal-State cooperative effort in which each State conducts its own survey to produce its estimates. The Bureau of Labor Statistics (BLS) provided each State with survey procedures, technical support, and troubleshooting assistance. The government agencies participating in this program were the 50 State Employment Security Agencies (SESAs) plus the District of Columbia, Puerto Rico, Guam, and American Samoa. For this report, estimates at the national level were produced by BLS-Washington based on data from the 50 States plus the District of Columbia. State-level estimates can be obtained from the individual SESAs.

SCOPE OF SURVEY

The BLS survey covered establishments in Standard Industrial Classification (SIC) codes 07, 20-39, and 806. However, data on SIC 07 (agricultural services) and on SIC 806 (hospitals) are not reported either in this publication or in BLS's own publications on the OES survey.

The reference date of this survey was the week that included April 12, May 12, or June 12, 1992. The reference date for any particular unit in the survey depended on its SIC code. See the chart below for those SICs covered in this publication.

SIC Code	Reference Date
20	June 12
21	June 12
22	April 12
23	April 12
24	May 12
25	May 12
26	April 12
27	May 12
28	June 12
29	May 12
30	June 12
31	April 12
32	May 12
33	April 12
34	June 12
35	June 12
36	June 12
37	June 12
38	April 12
39	May 12

METHOD OF COLLECTION

Survey schedules were initially mailed out to the personnel offices of almost all sampled establishments. Some of the larger establishments, however, received a personal visit.

Two additional mailings were sent to nonrespondents at approximately 6-week intervals. Nonrespondents that were critical to the survey because of their size received a telephone call or a personal visit as a followup.

SAMPLING PROCEDURES

The sampling frame for the OES survey was a list of units reported to the State's Unemployment Insurance (U.I.) files. The reference date of the sampling frame was the second quarter of 1991.

Within each State, the universe was stratified by SIC and size class, where size class was defined as follows:

Size Class	Employees
1	1-4
2	5-9
3	10-19
4	20-49
5	50-99
6	100-249
7	250-499
8	500-999
9	1,000+

U.I. reporting units with fewer than five employees were not sampled in most States; instead, units with five to nine employees were assigned a larger weight to account for employment in size class 1. U.I. reporting units with 250 or more employees were included in the sample with certainty. The sample sizes needed to calculate State estimates at a targeted relative standard error of 10, 15, or 20 percent for one standard deviation were developed for each SIC across its noncertainty size classes. The sample size for each SIC was determined by calculating averages of occupational rates and averages of coefficients of variation (CVs) for a given set of typical occupations using data from the previous survey round. Within each SIC, the sample size was then allocated proportionally across size classes based on size class employment. The sample was selected systematically with equal probability within each State/(area)[1]/SIC/size class cell.

The States were given the option of selecting three target relative standard errors in designing their samples. Many States took advantage of this flexibility by varying target relative standard error across SICs in order to balance the cost and reliability of their estimates.

The above allocation resulted in a total initial sample size of 147,539 U.I. reporting units nationally (including hospitals and agricultural services).

RESPONSE

Of those sampled, 138,975 were eligible units (i.e., respondents, refusals, unusables, and nonrespondents). Usable responses were obtained from 108,825 units, producing a response rate of 78.3 percent based on units and 71.7 percent based on weighted employment.[2]

OCCUPATIONAL ESTIMATES

Weights were determined for sample units that had usable response. Each weight was composed of two factors: the reciprocal of the probability of selection and a nonresponse adjustment factor (NRAF).

For questionnaires that were not returned or were otherwise unusable, an NRAF was calculated to impute for the missing data. This factor was the ratio

$$\frac{\text{Weighted sample employment of all eligible units in sample}}{\text{Weighted sample employment of all usable eligible units}}$$

It was calculated for each State/3-digit SIC/size class sampling cell.

The sample employment used to calculate the NRAF was obtained from the sampling frame. If the NRAF in a cell was greater than a predetermined maximum factor (the latter increases as the number of respondents in a cell increases), the cell was collapsed with other homogeneous cells in the industry until the NRAF for the combined cell was not greater than the appropriate maximum factor. If the collapsing procedure terminated (i.e., no more cells were available for collapse) before satisfying the constraint above, then the most recent maximum factor was used. Note that homogeneous cells were adjacent size cells within a State and SIC. The final weight assigned to each usable unit in the sample was the product of the NRAF and the reciprocal of the probability of selection.

A separate ratio estimate of occupational employment was used to develop national estimates. The auxiliary variable used was the 1992 population value of total employment. This variable is also referred to as cell benchmark employment, denoted by M_{ij}. The term

$$\frac{M_{ij}}{\sum_k W_{ijk} E_{ijk}}$$

is known as the benchmark factor. It is the ratio of cell benchmark employment to cell weighted reported total employment. The estimation formula below produced final estimates (P_{ij}) of occupational employment through benchmarking, that is, the process of multiplying the cell's weighted reported occupational employment ($\sum W_{ijk} P_{ijk}$) by its benchmark factor

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[1] Note: Some States opted to further stratify their samples by substate areas.

[2] Subsequent to the closeout date for national estimates, additional data were collected by the States and used to prepare their respective estimates. Consequently, the response rates in most States were higher than the response rate used to develop national estimates.

$$\hat{P}_{ij} = \left(\sum_k W_{ijk} P_{ijk}\right) \left(\frac{M_{ij}}{\sum W_{ijk} E_{ijk}}\right)$$

where $\hat{P}_{ij}$ = estimated employment for occupation P in industry i and size class j

i = a 3-digit industry

j = size class

k = establishment

W_{ijk} = weight for establishment k in industry i and size class j after adjusting for nonresponse

P_{ijk} = reported employment for occupation P in establishment k within industry i and size class j

E_{ijk} = reported total employment for establishment k in industry i and size class j

M_{ij} = population value of total employment for industry i and size class j.

The estimated employment for an occupation at the 3-digit industry i level was obtained by summing the occupational employment estimates P_{ij} across all size levels j within industry i.

$$\hat{P}_i = \sum_{j=1}^{L_i} \hat{P}_{ij}$$

where L_i was the number of size levels j in industry i.

Similarly, the estimated employment for an occupation at the 2-digit industry g level was obtained by summing the occupational employment estimates P_i across all 3-digit industries i within 2-digit industry g:

$$\hat{P}_g = \sum_{i=1}^{L_g} \hat{P}_i$$

where L_g was the number of 3-digit industries i in industry g.

It is important to note, however, that because of publishability requirements, rounding adjustments were made such that occupational employment estimates at the 3-digit industry level may not sum to the 2-digit level estimates.

VARIANCE ESTIMATES

Estimates of sampling error were calculated on survey estimates to allow users to determine whether or not the occupational estimates were reliable enough for their needs. Only a probability sample can be used to estimate sampling error from a sample.

The formulas used to estimate the variance, a common measure of sampling error, were based on the sample design and on the method of estimation. In the OES survey the formula used to estimate the variance of occupational employment was a subsample replication technique called the jackknife random group. The jackknife derives R estimates of total occupational employment from R subsamples of the parent sample by excluding one random group at a time. The jackknife then estimates the variance of the parent sample's employment estimator from the variability between the R employment estimates.

The variance for an occupational employment estimate at the 3-digit industry i/size class j level is

$$S^2(\hat{P}_{ij}) = \frac{1}{(R)\ (R-1)} \sum_{r=1}^{R} (\hat{P}_{ijr} - \hat{P}_{ij})^2$$

where

$S^2(\hat{P}_{ij})$ = estimated variance of $\hat{P}_{ij}$

R = number of random groups

$\hat{P}_{ij}$ = estimated employment for occupation P in industry i and size class j

$\hat{P}_{ijr}$ = estimated employment for occupation P in industry i, size class j, and subsample r

$\hat{P}_{ij}$ = estimated mean employment for occupation P in industry i and size class j across R subsamples.

The above formula for variance has been simplified. The actual formula includes corrections for finite populations.

The variance for an occupational employment estimate at the 3-digit industry i level is obtained by summing the variances $S^2(P_{ij})$ across all size levels j within industry i:

$$S^2(\hat{P}_i) = \sum_{j=1}^{L_i} S^2(\hat{P}_{ij})$$

where L_i is the number of size levels j in industry i.

Similarly, the variance for an occupational employment estimate at the 2-digit industry g level is obtained by summing the variances $S^2(P_i)$ across all 3-digit industries i within industry g.

$$S^2(\hat{P}_g) = \sum_{i=1}^{L_g} S^2(\hat{P}_i)$$

where L_g is the number of 3-digit industries i in industry g.

RELIABILITY OF ESTIMATES

Estimates developed from the sample may differ from the results of a complete census of all the establishments in the sampling frame. Two types of error—sampling and nonsampling—are possible in an estimate based on a sample survey. Sampling error occurs because observations are made only on a sample, not on the entire population. Nonsampling error can be attributed to many sources, e.g., an inability to obtain information about all cases in the sample, differences in the respondents' interpretation of questions, inability or unwillingness of respondents to provide correct information, errors made in recording, coding, or processing the data, errors made in estimating values for missing data, and failure to represent all units in the population.

Sampling error arises because the particular sample used in this survey is only one of a large number of possible samples of the same size that could have been selected with the same sample design. Estimates derived from those different samples would differ simply as a result of random effects. Relative standard errors that are a measure of that sampling error effect are presented in this publication. The relative standard errors of a survey estimate measure the variation among the estimates from all possible samples. The relative standard error is the standard error of the estimate divided by the employment estimate for that occupation. Thus, the relative standard error shows the size of the standard error relative to the occupational estimate itself.

Use of the relative standard error enables the analyst to construct a confidence interval around the occupational estimate. The confidence interval includes the average value of the estimates obtained from all possible samples (of that size and design) at a confidence level specified by the analyst. If no nonsampling error is present (which is unlikely) the interval will contain the true value with the confidence level specified.

To construct the confidence interval, divide the relative error shown in the table by 100 and multiply the result by the occupational estimate. The confidence interval is the occupational estimate, plus or minus the number resulting from the calculation described above. This estimate yields a confidence level of approximately 68%. That is, the "true value" (neglecting nonsampling error) will be contained in the interval 68% of the time. Most analysts prefer to have a confidence level higher than 68%. If a 90% confidence level is desired, multiply the number produced from the calculation in the first sentence above by 1.6. For a 95% confidence level, multiply by 1.96. For almost full confidence (99%), multiply by 2.57.

For example, suppose the occupational employment estimate for chemist is 5,000 with an associated relative standard error shown on the table[3] of 3. The 68% confidence interval will then be (3/100) x 5,000 or the chemist estimate plus or minus 150. The "true value" will be contained in the interval of 4,850 to 5,150 about 68% of the time. For 95% confidence, multipy 150 times 1.6 = 240. The 95% confidence interval is 4,760 to 5,240. It is important to remember that nonsampling error can have important effects on the accuracy of the estimate. Unfortunately nonsampling errors can be very difficult to measure and are not available.

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[3] Although the term "relative standard error" is used throughout the text, the term "relative error" is used in the tables. BLS asserts that the terms are statistically equivalent for the OES survey.

The relative standard errors primarily indicate the magnitude of the sampling error. They do not measure nonsampling error, including any biases in the data. Many edit and quality control procedures are used to reduce the nonsampling error caused by mistakes in recording, coding, and processing the data. The adjustments made for nonrespondents assumed that the characteristics of the nonrespondents are the same as those of the respondents at a given level. To the extent that nonrespondent and respondent characteristics are not the same, bias is introduced in the data. The magnitude of this bias is not known.

Particular care should be exercised in the interpretation of small estimates or small differences between estimates, because of relatively large sampling errors and the unknown magnitude of the biases.

Quality Control Measures

As described above, the OES survey is a Federal-State cooperative effort in which States conduct their own surveys.

A major concern with a cooperative program like OES is accommodating State-specific publication needs with limited resources while standardizing survey procedures across all 50 States and the District of Columbia in order to produce quality estimates. The control on sources of nonsampling error in this decentralized environment can be particularly difficult. In addition, the review and validation function is spread across eight regional offices, thus leading to procedural differences among regions. Examples of quality control measures employed by BLS are the Survey Processing and Management System (SPAM) and the Estimates Delivery System (EDS), which were developed to provide a consistent and automated framework for State procedures and to reduce the workload at State, regional, and national levels.

By standardizing data processing activities (i.e., validating the sample frame, allocating and selecting the sample, refining mailing addresses, addressing envelopes and mailers, editing and updating questionnaires, producing management reports, and producing estimates) across all States, the use of SPAM and EDS has also standardized the survey methodology. Use of these measures has significantly reduced the number of errors on the data files as well as the time needed to review them.

Other quality control measures used in the OES survey include

- followup solicitations of nonrespondents (especially critical nonrespondents),
- review of schedules to verify the accuracy and reasonableness of the reported data,
- adjustments of atypical data reporters,
- validation of the nonresponse adjustment factors,
- validation of the benchmark employment figures and of the benchmark factors, and
- validation of the analytical tables of estimates (at the 2- and 3-digit SIC levels).

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Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

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Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Total manufacturing	1635.0	100.0	134.5	100.0	205.5	100.0	767.1	100.0	527.9	100.0
Food and kindred products	38.2	2.3	4.2	3.1	9.2	4.5	8.1	1.1	16.8	3.2
Meat products	3.2	.2	.5	.3	.6	.3	.7	.1	1.4	.3
Dairy products	5.0	.3	.4	.3	1.1	.5	.7	.1	2.8	.5
Preserved fruits & vegetables	6.3	.4	.8	.6	1.3	.6	1.2	.2	3.0	.6
Grain mill products	5.6	.3	.5	.4	1.4	.7	1.3	.2	2.4	.5
Bakery products	2.1	.1	.3	.2	.3	.2	.9	.1	.6	.1
Sugar and confectionery products	3.6	.2	.4	.3	.9	.4	1.0	.1	1.4	.3
Fats and oils	1.4	.1	.1	.1	.4	.2	.3	<	.7	.1
Beverages	7.0	.4	.9	.6	2.3	1.1	1.2	.2	2.6	.5
Misc. food and kindred products	3.9	.2	.4	.3	.9	.4	.8	.1	1.8	.3
Tobacco products	4.0	.2	.3	.2	1.3	.6	1.1	.1	1.3	.2
Cigarettes	3.8	.2	.3	.2	1.2	.6	1.0	.1	1.2	.2
Cigars	<	<	.0	.0	<	<	<	<	<	<
Chewing and smoking tobacco	.1	<	<	<	<	<	<	<	.1	<
Tobacco stemming and redrying	.1	<	.0	.0	<	<	<	<	<	<
Textile mill products	11.1	.7	1.2	.9	2.0	1.0	3.1	.4	4.8	.9
Broadwoven fabric mills, cotton	1.5	.1	.1	.1	.3	.2	.4	<	.6	.1
Broadwoven fabric mills; manmade	1.6	.1	.2	.1	.3	.2	.4	.1	.6	.1
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Narrow fabric mills	.3	<	<	<	<	<	.1	<	.1	<
Knitting mills	2.0	.1	.3	.2	.4	.2	.4	.1	.9	.2
Textile finishing, except wool	1.5	.1	.1	.1	.4	.2	.3	<	.7	.1
Carpets and rugs	1.2	.1	.1	.1	.2	.1	.3	<	.5	.1
Yarn and thread mills	1.1	.1	.1	.1	.1	<	.4	<	.6	.1
Miscellaneous textile goods	1.7	.1	.2	.1	.3	.1	.7	.1	.6	.1
Apparel and other textile products	6.6	.4	.9	.7	.8	.4	2.6	.3	2.2	.4
Men's & boys' suits and coats	.3	<	.1	<	<	<	.1	<	.1	<
Men's & boys' furnishings	1.9	.1	.3	.2	.3	.1	.7	.1	.6	.1
Women's and misses' outerwear	1.1	.1	.2	.1	.2	.1	.4	.1	.3	.1
Women's and children's undergarments	.7	<	.1	.1	.1	<	.2	<	.3	.1
Hats, caps, and millinery	.1	<	<	<	<	<	<	<	<	<
Girls' and children's outerwear	.3	<	<	<	<	<	.1	<	.1	<
Miscellaneous apparel and accessories	.2	<	<	<	<	<	.1	<	.1	<

See explanatory information and SOURCE at end of table.

Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 2 of 6

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Apparel and other textile products--continued:										
Miscellaneous fabricated textile products	2.0	0.1	0.3	0.2	0.2	0.1	0.9	0.1	0.7	0.1
Lumber and wood products	10.0	.6	.8	.6	2.3	1.1	1.6	.2	5.4	1.0
Logging	.8	<	.0	.0	.7	.4	<	<	<	<
Sawmills and planing mills	1.9	.1	.2	.1	.9	.4	.3	<	.5	.1
Millwork, plywood & structural members	4.7	.3	.4	.3	.4	.2	.7	.1	3.2	.6
Wood containers	.1	<	<	<	.0	.0	<	<	<	<
Wood buildings and mobile homes	1.6	.1	.1	.1	<	<	.2	<	1.3	.2
Miscellaneous wood products	1.0	.1	.1	.1	.2	.1	.3	<	.4	.1
Furniture and fixtures	9.8	.6	1.1	.8	.8	.4	2.9	.4	4.9	.9
Household furniture	2.8	.2	.4	.3	.4	.2	.8	.1	1.2	.2
Office furniture	1.9	.1	.2	.2	.1	.1	.7	.1	.9	.2
Public building & related furniture	1.5	.1	.1	.1	.1	<	.6	.1	.8	.1
Partitions and fixtures	2.5	.2	.2	.2	.1	.1	.6	.1	1.5	.3
Miscellaneous furniture and fixtures	1.2	.1	.1	.1	.1	.1	.3	<	.6	.1
Paper and allied products	27.4	1.7	2.8	2.1	5.0	2.4	11.8	1.5	7.8	1.5
Pulp mills	.9	.1	.1	.1	.2	.1	.5	.1	.2	<
Paper mills	9.2	.6	.8	.6	1.6	.8	4.2	.5	2.6	.5
Paperboard mills	2.7	.2	.2	.2	.4	.2	1.3	.2	.8	.2
Paperboard containers and boxes	2.2	.1	.2	.2	.3	.1	.9	.1	.8	.1
Misc. converted paper products	12.3	.8	1.4	1.1	2.5	1.2	4.9	.6	3.5	.7
Printing and publishing	21.9	1.3	2.6	2.0	8.1	3.9	2.7	.4	8.4	1.6
Newspapers	4.4	.3	.7	.5	1.6	.8	.5	.1	1.6	.3
Periodicals	3.9	.2	.4	.3	1.6	.8	.4	.1	1.4	.3
Books	3.3	.2	.4	.3	1.6	.8	.1	<	1.1	.2
Miscellaneous publishing	2.8	.2	.2	.2	1.1	.5	.2	<	1.3	.2
Commercial printing	4.0	.2	.5	.3	.9	.4	.8	.1	1.8	.3
Manifold business forms	1.0	.1	.1	.1	.3	.2	.2	<	.3	.1
Greeting cards	1.0	.1	<	<	.5	.3	.2	<	.2	<
Blankbooks and bookbinding	.7	<	.1	.1	.1	.1	.2	<	.3	.1
Printing trade services	.9	.1	.1	.1	.2	.1	.1	<	.5	.1
Chemicals and allied products	205.2	12.5	14.7	10.9	72.3	35.2	50.0	6.5	68.2	12.9
Industrial inorganic chemicals	27.1	1.7	2.2	1.6	4.7	2.3	12.9	1.7	7.3	1.4
Plastics materials and synthetics	26.9	1.6	1.6	1.2	4.3	2.1	10.3	1.3	10.6	2.0

See explanatory information and SOURCE at end of table.

Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 3 of 6

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Chemical and allied products--continued:										
Drugs	74.0	4.5	5.9	4.4	41.0	20.0	7.2	0.9	19.9	3.8
Soap, cleaners, and toilet goods	13.4	.8	1.6	1.2	5.7	2.8	2.3	.3	3.8	.7
Paints and allied products	6.6	.4	.4	.3	2.4	1.2	1.0	.1	2.8	.5
Industrial organic chemicals	37.8	2.3	1.7	1.3	8.6	4.2	11.4	1.5	16.1	3.0
Agricultural chemicals	6.4	.4	.3	.3	1.8	.9	1.7	2	2.5	5
Miscellaneous chemical products	12.9	.8	.8	6	3.7	1.8	3.1	4	5.2	1.0
Petroleum and coal products	24.1	1.5	1.4	1.0	3.9	1.9	10.5	1.4	8.2	1.6
Petroleum refining	22.2	1.4	1.1	8	3.5	1.7	10.1	1.3	7.4	1.4
Asphalt paving and roofing materials	.7	<	.1	.1	.1	.1	.1	<	3	1
Misc. petroleum and coal products	1.2	.1	.1	.1	.3	.2	.3	<	5	1
Rubber and misc. plastics products	33.9	2.1	4.3	3.2	2.7	1.3	14.8	1.9	12.1	2.3
Tires and inner tubes	3.7	.2	.3	.3	.3	.2	1.5	2	1.5	3
Rubber and plastics footwear	.2	<	.1	<	.1	<	.1	<	1	<
Hose & belting & gaskets & packing	3.0	.2	.3	3	.2	.1	1.4	.2	1.0	.2
Fabricated rubber products, nec	4.8	.3	.5	.4	.5	.2	2.0	.3	1.8	3
Miscellaneous plastics products, nec	22.1	1.4	3.1	2.3	1.5	.7	9.8	1.3	7.7	1.5
Leather and leather products	1.4	.1	2	.1	.4	.2	.4	<	.4	1
Leather tanning and finishing	.5	<	.1	<	.1	.1	.1	<	.2	<
Footwear cut stock	<	<	.0	.0	.0	.0	<	<	.0	0
Footwear, except rubber	.7	<	.1	.1	.2	.1	.2	<	.2	<
Leather gloves and mittens	<	<	0	.0	<	<	.0	.0	.0	.0
Luggage	.2	<	<	<	<	<	.1	<	.1	<
Handbags and personal leather goods	<	<	<	<	.0	.0	<	<	<	<
Leather goods, nec	.1	<	<	<	<	<	<	<	.0	0
Stone, clay and glass products	17.3	1.1	1.5	1.1	1.8	.9	6.9	9	7.1	1.4
Flat glass	.7	<	<	<	.1	<	4	.1	.2	<
Glass and glassware, pressed or blown	3.4	2	.2	.2	4	2	1.4	.2	1.4	3
Products of purchased glass	2.9	.2	.3	2	.3	1	1.4	.2	9	.2
Cement, hydraulic	1.2	.1	.1	<	.2	.1	.3	<	.6	.1
Structural clay products	.8	<	1	1	.1	<	.3	<	.3	.1
Pottery and related products	1.7	.1	.1	.1	.1	.1	.8	.1	.7	.1

See explanatory information and SOURCE at end of table

Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 4 of 6

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Stone, clay and glass products--continued:										
Concrete, gypsum, and plaster products	2.6	0.2	0.3	0.2	0.2	0.1	0.7	0.1	1.4	0.3
Cut stone and stone products	.4	<	<	<	.0	.0	<	<	.4	.1
Misc. nonmetallic mineral products	3.6	.2	.4	.3	.4	.2	1.5	.2	1.4	.3
Primary metal industries	38.7	2.4	3.2	2.4	4.0	1.9	18.3	2.4	13.2	2.5
Blast furnace and basic steel products	14.4	.9	1.0	.8	1.8	.9	6.5	.8	5.0	1.0
Iron and steel foundries	4.5	.3	.3	.2	.2	.1	2.3	.3	1.6	.3
Primary nonferrous metals	3.3	.2	.2	.2	.4	.2	1.4	.2	1.2	.2
Secondary nonferrous metals	.9	.1	.1	.1	.2	.1	.3	<	.3	.1
Nonferrous rolling and drawing	11.6	.7	1.0	.7	1.1	.5	5.6	.7	3.8	.7
Nonferrous foundries (castings)	2.5	.2	.3	.2	.1	<	1.3	.2	.8	.2
Miscellaneous primary metal products	1.6	.1	.2	.2	.1	.1	.8	.1	.5	.1
Fabricated metal products	64.0	3.9	6.1	4.5	4.1	2.0	27.4	3.6	26.4	5.0
Metal cans and shipping containers	1.1	.1	.2	.1	.2	.1	.4	.1	.3	.1
Cutlery, hand tools, and hardware	6.0	.4	.6	.5	.9	.4	2.6	.3	1.9	.4
Plumbing and heating, except electric	2.6	.2	.3	.2	.1	.1	1.1	.1	1.1	.2
Fabricated structural metal products	19.6	1.2	1.4	1.1	.6	.3	6.0	.8	11.5	2.2
Screw machine products, bolts, etc.	2.8	.2	.4	.3	.1	.1	1.5	.2	.8	.2
Metal forgings and stampings	8.1	.5	.9	.7	.3	.1	4.6	.6	2.3	.4
Metal services, nec	2.0	.1	.2	.1	.2	.1	.9	.1	.7	.1
Ordnance and accessories, nec	11.5	.7	.9	.7	1.1	.5	5.6	.7	3.8	.7
Misc. fabricated metal products	10.3	.6	1.2	.9	.5	.2	4.7	.6	4.0	.8
Industrial machinery and equipment	291.1	17.8	28.4	21.1	18.5	9.0	147.7	19.3	96.6	18.3
Engines and turbines	12.4	.8	.9	.7	.8	.4	7.5	1.0	3.2	.6
Farm and garden machinery	6.5	.4	.5	.4	.9	.4	3.3	.4	1.8	.3
Construction and related machinery	24.0	1.5	2.4	1.8	2.3	1.1	10.9	1.4	8.3	1.6
Metalworking machinery	26.6	1.6	2.3	1.7	.7	.3	12.7	1.7	10.9	2.1
Special industry machinery	22.9	1.4	2.4	1.8	.7	.3	11.9	1.5	7.9	1.5
General industrial machinery	29.7	1.8	2.9	2.2	1.1	.5	15.8	2.1	10.0	1.9

See explanatory information and SOURCE at end of table.

Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 5 of 6

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Industrial machinery and equipment--continued:										
Computer and office equipment	138.7	8.5	13.5	10.1	11.2	5.5	70.8	9.2	43.1	8.2
Refrigeration and service machinery	14.3	.9	1.3	1.0	.4	.2	7.1	.9	5.6	1.1
Industrial machinery, nec	16.0	1.0	2.1	1.5	.4	.2	7.8	1.0	5.7	1.1
Electronic & other electric equipment	268.8	16.4	21.4	15.9	15.1	7.3	136.6	17.8	95.8	18.1
Electric distribution equipment	12.0	.7	.9	.7	.5	.2	6.6	9	4.0	8
Electrical industrial apparatus	20.6	1.3	1.7	1.3	.7	.4	10.4	1.4	7.8	1.5
Household appliances	5.8	.4	.5	.4	.7	3	3.0	.4	1.6	.3
Electric lighting and wiring equipment	12.0	.7	1.4	1.1	.8	.4	6.1	.8	3.7	.7
Household audio and video equipment	10.4	.6	.7	.5	.5	.2	5.9	.8	3.3	.6
Communication equipment	66.8	4.1	5.2	3.8	3.6	1.7	35.7	4.7	22.4	4.2
Electronic components and accessories	122.7	7.5	9.5	7.1	7.4	3.6	58.5	7.6	47.2	8.9
Misc. electrical equipment & supplies	18.5	1.1	1.5	1.1	1.0	.5	10.2	1.3	5.8	1.1
Transportation equipment	328.1	20.1	19.0	14.1	33.6	16.4	201.7	26.3	73.8	14.0
Motor vehicles and equipment	79.6	4.9	3.4	2.5	6.2	3.0	46.4	6.0	23.7	4.5
Aircraft and parts	170.7	10.4	10.3	7.7	20.3	9.9	107.8	14.1	32.3	6.1
Ship and boat building and repairing	9.7	.6	.5	.4	.3	2	3.5	.5	5.4	1.0
Railroad equipment	1.8	.1	1	.1	.1	1	1.0	.1	.5	.1
Motorcycles, bicycles, and parts	.6	<	.1	.1	.1	<	.2	<	.2	<
Guided missiles, space vehicles, parts	63.7	3.9	4.4	3.2	6.5	3.2	41.8	5.5	11.0	2.1
Miscellaneous transportation equipment	1.9	.1	.2	.1	.1	<	1.0	.1	.7	.1
Instruments and related products	223.4	13.7	19.3	14.4	18.3	8.9	115.9	15.1	69.9	13.2
Search and navigation equipment	98.2	6.0	9.1	6.8	8.0	3.9	57.4	7.5	23.7	4.5
Measuring and controlling devices	66.4	4.1	4.8	3.6	3.7	1.8	35.0	4.6	22.9	4.3
Medical instruments and supplies	36.8	2.2	3.5	2.6	4.3	2.1	15.4	2.0	13.6	2.6
Ophthalmic goods	2.6	.2	.3	.2	.5	.3	.8	.1	1.0	.2
Photographic equipment and supplies	19.1	1.2	1.5	1.1	1.8	.9	7.2	.9	8.6	1.6
Watches, clocks, watchcases & parts	.3	<	<	<	<	<	.1	<	.1	<

See explanatory information and SOURCE at end of table.

Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 6 of 6

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Miscellaneous manufacturing industries	10.2	0.6	1.2	0.9	1.4	0.7	3.1	0.4	4.5	0.9
Jewelry, silverware, and plated ware	.7	<	.1	.1	.2	.1	.2	<	.3	<
Musical instruments	.3	<	<	<	<	<	.1	<	.2	<
Toys and sporting goods	3.4	.2	5	.3	.5	.3	1.0	.1	1.3	.3
Pens, pencils, office, & art supplies	1.4	.1	.2	.1	.2	.1	.5	.1	.4	.1
Costume jewelry and notions	.8	.1	.1	.1	.2	.1	.3	<	.2	<
Miscellaneous manufactures	3.6	.2	.3	2	.3	.1	1.0	.1	2.1	.4

NOTE: Because of rounding, components may not add to totals.

KEY:

<	=	The estimated actual value is less than 50.
0	=	Data were collected and the reported number or value was zero.
n.e.c.	=	not elsewhere classified

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-2. Scientists in manufacturing industries, by broad industry group of employment and detailed occupation: 1992

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Physical	Mathe-matical	Life	Social	Com-puter
Total manufacturing	205.5	61.2	8.8	29.5	0.0	106.0
Food and kindred products	9.2	4.2	.0	1.0	.0	4.0
Tobacco products	1.3	.5	.0	.1	.0	.7
Textile mill products	2.0	.6	.0	.0	.0	1.4
Apparel and other textile products	.8	<	.0	.0	.0	.8
Lumber and wood products	2.3	<	.0	1.6	.0	.6
Furniture and fixtures	.8	<	.0	.0	.0	.8
Paper and allied products	5.0	1.4	.0	.3	.0	3.3
Printing and publishing	8.1	.2	.0	.3	.0	7.6
Chemicals and allied products	72.3	36.1	1.0	23.5	.0	11.6
Petroleum and coal products	3.9	2.9	.0	.1	.0	1.0
Rubber and misc. plastics products	2.7	1.3	.0	<	.0	1.4
Leather and leather products	.4	.1	.0	.0	.0	.3
Stone, clay and glass products	1.8	.9	.0	<	.0	.9
Primary metal industries	4.0	1.3	.0	<	.0	2.6
Fabricated metal products	4.1	1.0	.0	.2	.0	2.9
Industrial machinery and equipment	18.5	.5	1.2	<	.0	16.7
Electronic & other electric equipment	15.1	2.3	1.0	<	.0	11.8
Transportation equipment	33.6	2.8	5.1	<	.0	25.6
Instruments and related products	18.3	4.6	.6	2.1	.0	11.0
Miscellaneous manufacturing industries	1.4	.2	.0	<	.0	1.2

NOTE: Because of rounding, components may not add to totals.

KEY:
< = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-3. Engineers in manufacturing industries, by broad industry group of employment and detailed occupation: 1992

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Aero-nautical	Civil	Elec-trical/elec-tronics	Com-puter	Me-chan-ical	Indus-trial	Sales	Other
Total manufacturing	767.1	36.1	6.8	168.7	77.3	138.0	90.7	35.1	214.2
Food and kindred products	8.1	.0	.0	.0	.0	3.2	2.4	.1	2.4
Tobacco products	1.0	.0	.0	.0	.0	.4	.1	.0	.5
Textile mill products	3.2	.0	.0	.0	.0	.9	1.6	.2	.4
Apparel and other textile products	2.6	.0	.0	.0	.0	.6	1.6	.1	.2
Lumber and wood products	1.6	.0	.0	.0	.0	.5	.5	.2	.4
Furniture and fixtures	2.9	.0	.0	.0	.0	.9	1.3	.2	.6
Paper and allied products	11.8	.0	.0	1.2	.6	2.5	1.3	.2	6.0
Printing and publishing	2.7	.0	.0	.0	.0	.6	.8	.1	1.3
Chemicals and allied products	50.0	.0	1.4	3.5	2.0	7.9	4.2	1.5	29.4
Petroleum and coal products	10.5	.0	.5	.6	.6	1.6	.4	.1	6.7
Rubber and misc. plastics products	14.8	.0	.0	.8	.4	6.0	2.5	1.2	3.9
Leather and leather products	.4	.0	.0	.0	.0	.1	.2	.0	.1
Stone, clay and glass products	6.9	.0	.4	.6	.3	1.2	1.2	.7	2.4
Primary metal industries	18.3	.0	.0	1.8	1.3	3.2	2.5	1.0	8.5
Fabricated metal products	27.4	.0	1.4	1.6	.8	10.8	3.9	2.4	6.6
Industrial machinery and equipment	147.7	.0	.6	30.6	35.8	36.6	13.4	13.8	16.8
Electronic & other electric equipment	136.6	.0	.2	55.6	19.6	15.6	14.8	7.9	22.9
Transportation equipment	201.7	36.1	2.4	20.8	2.4	28.0	24.0	1.9	86.1
Instruments and related products	115.9	.0	.0	51.5	13.6	16.4	13.1	3.3	18.0
Miscellaneous manufacturing industries	3.1	.0	.0	.0	.0	1.1	.8	.3	.9

NOTE: Because of rounding, components may not add to totals.

KEY: < = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-4. Technicians in manufacturing industries, by broad industry group of employment and detailed occupation: 1992

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Job Category			Engineering				
						Job Category			
		Computer programmer	Drafter	Science	Total	Electrical/ electronics	Mechanical	Civil	Other
Total manufacturing	527.9	71.3	100.7	91.5	264.4	126.5	37.6	2.2	98.1
Food and kindred products	16.8	2.3	.0	12.1	2.4	.0	.5	.0	2.0
Tobacco products	1.3	.2	.0	.7	.4	.0	.0	.0	.4
Textile mill products	4.8	1.0	.0	1.8	1.9	.0	.1	.0	1.8
Apparel and other textile products	2.2	.9	.0	.1	1.2	.0	.1	.0	1.1
Lumber and wood products	5.4	.5	3.9	.2	.8	.0	.2	.0	.6
Furniture and fixtures	4.9	.6	3.3	<	1.0	.0	.2	.0	.9
Paper and allied products	7.8	1.2	.8	2.8	3.1	.8	.4	.0	1.9
Printing and publishing	8.4	5.7	1.3	.1	1.4	.0	.1	.0	1.3
Chemicals and allied products	68.2	4.4	2.5	48.8	12.6	4.6	2.1	.0	5.8
Petroleum and coal products	8.2	1.0	.6	4.5	2.2	.5	.2	.0	1.5
Rubber and misc. plastics products	12.1	1.1	2.8	2.8	5.3	1.0	1.5	.0	2.8
Leather and leather products	.4	.1	.0	.2	.2	.0	.0	.0	.2
Stone, clay and glass products	7.1	.6	2.0	1.3	3.2	.6	.6	.1	1.8
Primary metal industries	13.2	1.1	2.1	2.9	7.1	1.5	1.0	.0	4.6
Fabricated metal products	26.4	3.2	14.5	1.0	7.7	2.0	1.8	.0	3.9
Industrial machinery and equipment	96.6	22.3	26.0	1.8	46.5	25.8	7.8	.1	12.8
Electronic & other electric equipment	95.8	7.6	14.5	2.9	70.9	49.8	4.8	.4	15.8
Transportation equipment	73.8	9.8	16.0	1.9	46.1	10.4	8.1	1.5	26.1
Instruments and related products	69.9	6.8	8.6	5.5	49.0	29.4	7.9	.0	11.6
Miscellaneous manufacturing industries	4.5	.8	2.0	.2	1.6	.0	.3	.0	1.2

NOTE: Because of rounding, components may not add to totals.

KEY:
< = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Meat products (SIC 2010):			
Scientific and technical personnel	3,220	0.6	(nc)
Scientists	620	.1	(nc)
Chemists	210	<	4
All other physical scientists	20	.0	(nc)
Life scientists	90	<	7
Computer analysts	300	.1	(nc)
Managers of scientific and technical personnel	460	.1	2
Engineers	740	.1	(nc)
Industrial	280	.1	2
Mechanical	250	<	5
Sales	40	.0	2
Other, n.e.c	170	<	(nc)
Technicians	1,400	.3	(nc)
Computer programmers	350	.1	2
Mechanical engineering technicians	40	.0	0
All other engineering technicians	170	<	(nc)
Biological science technicians	470	.1	7
Chemical technicians, except health	290	.1	4
All other physical and life science technicians	80	<	(nc)
Dairy products (SIC 2020):			
Scientific and technical personnel	5,050	3.2	(nc)
Scientists	1,110	.7	(nc)
All other physical scientists	680	.4	(nc)
Life scientists	100	.1	12
Computer analysts	330	.2	(nc)
Managers of scientific and technical personnel	380	.2	3
Engineers	730	.4	(nc)
Industrial	200	.1	9
Mechanical	330	.2	13
Sales	30	<	34
Other, n.e.c	170	.1	(nc)
Technicians	2,830	1.8	(nc)
Computer programmers	240	.2	4
Mechanical engineering technicians	20	<	5
All other engineering technicians	190	.1	(nc)
Biological science technicians	1,270	.8	5
Chemical technicians, except health	810	.5	4
All other physical and life science technicians	300	.2	(nc)
Preserved fruits & vegetables (SIC 2030):			
Scientific and technical personnel	6,330	2.5	(nc)
Scientists	1,280	.5	(nc)
Chemists	380	.2	11
All other physical scientists	80	<	(nc)
Life scientists	270	.1	3

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Preserved fruits & vegetables (SIC 2030) — continued:			
Scientists — continued			
Computer analysts	550	0.2	(nc)
Managers of scientific and technical personnel	830	.3	6
Engineers	1,210	.5	(nc)
Industrial	360	.1	11
Mechanical	530	.2	4
Other, n.e.c	320	.1	(nc)
Technicians	3,010	1.2	(nc)
Computer programmers	370	.2	13
Mechanical engineering technicians	70	<	10
All other engineering technicians	350	.1	(nc)
Biological science technicians	1,330	.5	10
Chemical technicians, except health	790	.3	13
All other physical and life science technicians	100	<	(nc)
Grain mill products (SIC 2040):			
Scientific and technical personnel	5,600	4.3	(nc)
Scientists	1,410	1.1	(nc)
Chemists	880	.7	3
All other physical scientists	30	<	(nc)
Life scientists	130	.1	7
Computer analysts	370	.3	(nc)
Managers of scientific and technical personnel	500	.4	3
Engineers	1,260	1.0	(nc)
Industrial	450	.4	1
Mechanical	440	.3	4
Sales	50	<	53
Other, n.e.c	320	.2	(nc)
Technicians	2,430	1.9	(nc)
Computer programmers	230	.2	2
Mechanical engineering technicians	90	.1	3
All other engineering technicians	290	.2	(nc)
Biological science technicians	700	.6	8
Chemical technicians, except health	950	.7	3
All other physical and life science technicians	170	.1	(nc)
Bakery products (SIC 2050):			
Scientific and technical personnel	2,110	1.0	(nc)
Scientists	330	.1	(nc)
Chemists	90	<	19
Life scientists	20	.0	0
Computer analysts	220	.1	(nc)
Managers of scientific and technical personnel	280	1	3

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Bakery products (SIC 2050) — continued:			
Engineers	900	0.4	(nc)
Industrial	200	.1	8
Mechanical	450	.2	3
Other, n.e.c	250	.1	(nc)
Technicians	600	.3	(nc)
Computer programmers	130	.1	1
Mechanical engineering technicians	50	<	3
All other engineering technicians	170	.1	(nc)
Biological science technicians	130	.1	6
Chemical technicians, except health	120	<	5
Sugar and confectionery products (SIC 2060):			
Scientific and technical personnel	3,600	3.5	(nc)
Scientists	860	.8	(nc)
Chemists	320	.3	2
All other physical scientists	40	<	(nc)
Life scientists	60	<	5
Computer analysts	440	.4	(nc)
Managers of scientific and technical personnel	370	.4	1
Engineers	960	1.0	(nc)
Industrial	160	.2	2
Mechanical	400	.4	1
Other, n.e.c	400	.4	(nc)
Technicians	1,410	1.4	(nc)
Computer programmers	170	.2	1
Mechanical engineering technicians	70	.1	0
All other engineering technicians	250	.2	(nc)
Biological science technicians	330	.3	6
Chemical technicians, except health	530	.5	3
All other physical and life science technicians	60	<	(nc)
Fats and oils (SIC 2070):			
Scientific and technical personnel	1,440	4.5	(nc)
Scientists	360	1.1	(nc)
Chemists	240	.8	3
All other physical scientists	20	<	(nc)
Life scientists	50	.2	0
Computer analysts	50	.2	(nc)
Managers of scientific and technical personnel	100	.3	0
Engineers	260	.8	(nc)
Industrial	100	.3	1
Mechanical	90	.3	1
Other, n.e.c	70	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Fats and oils (SIC 2070) — continued:			
Technicians	720	2.3	(nc)
Computer programmers	90	.3	4
Mechanical engineering technicians	30	.1	0
All other engineering technicians	60	.2	(nc)
Biological science technicians	170	.5	3
Chemical technicians, except health	280	.9	<
All other physical and life science technicians	90	.3	(nc*)
Beverages (SIC 2080):			
Scientific and technical personnel	6,960	3.7	(nc)
Scientists	2,270	1.2	(nc)
Chemists	930	.5	13
All other physical scientists	120	.1	(nc)
Life scientists	200	.1	9
Computer analysts	1,020	.5	(nc)
Managers of scientific and technical personnel	870	.5	2
Engineers	1,200	.6	(nc)
Industrial	280	.2	3
Mechanical	420	.2	5
Sales	20	.0	0
Other, n.e.c	480	.3	(nc)
Technicians	2,620	1.4	(nc)
Computer programmers	380	.2	4
Mechanical engineering technicians	50	<	0
All other engineering technicians	420	.2	(nc)
Biological science technicians	340	.2	7
Chemical technicians, except health	1,160	.6	4
All other physical and life science technicians	270	.1	(nc)
Misc. food and kindred products (SIC 2090):			
Scientific and technical personnel	3,920	1.9	(nc)
Scientists	910	.4	(nc)
Chemists	150	.1	9
Life scientists	90	<	16
Computer analysts	670	.3	(nc)
Managers of scientific and technical personnel	390	.2	1
Engineers	840	.4	(nc)
Industrial	330	.2	3
Mechanical	320	.2	3
Other, n.e.c	190	.1	(nc)
Technicians	1,780	.9	(nc)
Computer programmers	310	.2	3
Mechanical engineering technicians	40	<	0
All other engineering technicians	60	<	(nc)
Biological science technicians	550	.3	4

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Misc. food and kindred products (SIC 2090) — continued:			
Technicians — continued			
Chemical technicians, except health	730	0.4	2
All other physical and life science technicians	90	<	(nc)
Cigarettes (SIC 2110):			
Scientific and technical personnel	3,780	10.5	(nc)
Scientists	1,240	3.4	(nc)
All other physical scientists	500	1.4	(nc)
Life scientists	90	.2	0
Computer analysts	650	1.8	(nc)
Managers of scientific and technical personnel	310	9	0
Engineers	1,000	2.8	(nc)
Industrial	100	.3	0
Mechanical	420	1.2	0
Other, n.e.c	480	1.3	(nc)
Technicians	1,230	3.4	(nc)
Computer programmers	220	6	0
All other engineering technicians	370	1.0	(nc)
Chemical technicians, except health	470	1.3	0
All other physical and life science technicians	170	.5	(nc)
Cigars (SIC 2120):			
Scientific and technical personnel	30	1.0	(nc)
Scientists	10	.4	(nc)
Computer analysts	10	.3	(nc)
Engineers	10	.4	(nc)
Other, n.e.c	10	.4	(nc)
Technicians	10	.2	(nc)
All other engineering technicians	10	.2	(nc)
Chewing and smoking tobacco (SIC 2130):			
Scientific and technical personnel	120	3.8	(nc)
Scientists	40	1.2	(nc)
Chemists	10	.3	0
Computer analysts	30	.8	(nc)
Managers of scientific and technical personnel	10	.4	0
Engineers	20	.7	(nc)
Mechanical	10	.3	0
Other, n.e.c	10	.4	(nc)
Technicians	50	1.6	(nc)
Chemical technicians, except health	50	1.4	0

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Tobacco stemming and redrying (SIC 2140):			
Scientific and technical personnel	50	1.2	(nc)
Scientists	10	.4	(nc)
Computer analysts	10	.2	0
Engineers	20	.4	(nc)
Industrial	10	.1	0
Other, n.e.c	10	.2	(nc)
Technicians	20	.5	(nc)
Computer programmers	20	.4	0
Broadwoven fabric mills, cotton (SIC 2210):			
Scientific and technical personnel	1,470	1.6	(nc)
Scientists	310	.3	(nc)
Chemists	40	<	0
All other physical scientists	10	<	(nc)
Computer analysts	260	.3	(nc)
Managers of scientific and technical personnel	140	.2	0
Engineers	380	.4	(nc)
Industrial	260	.3	0
Mechanical	100	.1	0
Other, n.e.c	20	<	(nc)
Technicians	640	.7	(nc)
Computer programmers	140	.2	0
Mechanical engineering technicians	30	<	0
All other engineering technicians	290	.3	(nc)
Chemical technicians, except health	160	.2	0
All other physical and life science technicians	20	<	(nc)
Broadwoven fabric mills, manmade (SIC 2220):			
Scientific and technical personnel	1,560	2.1	(nc)
Scientists	310	.4	(nc)
Chemists	40	<	0
All other physical scientists	10	.0	(nc)
Computer analysts	260	.4	(nc)
Managers of scientific and technical personnel	180	.2	7
Engineers	430	6	(nc)
Industrial	250	.4	2
Mechanical	90	.1	2
Sales	40	<	0
Other, n.e.c	50	.1	(nc)
Technicians	640	.9	(nc)
Computer programmers	160	.2	4
Mechanical engineering technicians	10	<	0
All other engineering technicians	290	4	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Broadwoven fabric mills, manmade (SIC 2220) — continued:			
Technicians — continued			
Chemical technicians, except health	150	0.2	0
All other physical and life science technicians	30	<	(nc)
Broadwoven fabric mills, wool (SIC 2230):			
Scientific and technical personnel	340	1.9	(nc)
Scientists	40	.2	(nc)
Chemists	20	.1	0
Computer analysts	20	.1	(nc)
Managers of scientific and technical personnel	40	.2	0
Engineers	120	.7	(nc)
Industrial	40	.2	0
Mechanical	10	.1	0
Sales	50	.3	0
Other, n.e.c	20	.1	(nc)
Technicians	140	.7	(nc)
Computer programmers	20	.1	0
All other engineering technicians	50	.3	(nc)
All other physical and life science technicians	70	.4	(nc)
Narrow fabric mills (SIC 2240):			
Scientific and technical personnel	260	1.1	(nc)
Scientists	30	.1	(nc)
Chemists	10	<	0
Computer analysts	20	.1	(nc)
Managers of scientific and technical personnel	40	.2	0
Engineers	100	.4	(nc)
Industrial	30	.1	0
Mechanical	40	.2	3
Sales	20	.1	0
Other, n.e.c	10	<	(nc)
Technicians	90	.4	(nc)
Computer programmers	30	.1	0
All other engineering technicians	40	.2	(nc)
Chemical technicians, except health	20	.1	0
Knitting mills (SIC 2250):			
Scientific and technical personnel	1,980	.9	(nc)
Scientists	370	.2	(nc)
Chemists	80	<	10
All other physical scientists	30	<	(nc)
Computer analysts	260	.1	(nc)
Managers of scientific and technical personnel	270	.1	4

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Knitting mills (SIC 2250) — continued:			
Engineers	420	0.2	(nc)
Industrial	300	.1	3
Mechanical	90	<	2
Other, n.e.c	30	<	(nc)
Technicians	920	.4	(nc)
Computer programmers	240	.1	7
Mechanical engineering technicians	30	<	0
All other engineering technicians	360	.2	(nc)
Chemical technicians, except health	240	.1	7
All other physical and life science technicians	50	<	(nc)
Textile finishing, except wool (SIC 2260):			
Scientific and technical personnel	1,520	2.1	(nc)
Scientists	410	.6	(nc)
Chemists	180	.2	6
All other physical scientists	20	<	(nc)
Computer analysts	210	.3	(nc)
Managers of scientific and technical personnel	100	.1	9
Engineers	320	.4	(nc)
Industrial	160	.2	4
Mechanical	100	.1	4
Other, n.e.c	60	.1	(nc)
Technicians	690	1.0	(nc)
Computer programmers	150	.2	6
All other engineering technicians	90	.1	(nc)
Chemical technicians, except health	430	.6	1
All other physical and life science technicians	20	<	(nc)
Carpets and rugs (SIC 2270):			
Scientific and technical personnel	1,160	1.9	(nc)
Scientists	190	.3	(nc)
Chemists	40	.1	24
All other physical scientists	10	<	(nc)
Computer analysts	140	.2	(nc)
Managers of scientific and technical personnel	140	.2	6
Engineers	330	.5	(nc)
Industrial	120	.2	6
Mechanical	140	.2	9
Sales	20	<	13
Other, n.e.c	50	.1	(nc)
Technicians	500	.8	(nc)
Computer programmers	200	.3	4
Mechanical engineering technicians	30	<	2
All other engineering technicians	100	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Carpets and rugs (SIC 2270) — continued:			
Technicians — continued			
Chemical technicians, except health	170	0.3	29
Yarn and thread mills (SIC 2280):			
Scientific and technical personnel	1,100	1.0	(nc)
Scientists	90	.1	(nc)
Chemists	20	<	6
Computer analysts	70	.1	(nc)
Managers of scientific and technical personnel	90	.1	8
Engineers	370	.4	(nc)
Industrial	240	.2	4
Mechanical	100	.1	9
Other, n.e.c	30	<	(nc)
Technicians	550	.5	(nc)
Computer programmers	50	<	4
Mechanical engineering technicians	40	<	26
All other engineering technicians	290	.3	(nc)
Chemical technicians, except health	140	.1	11
All other physical and life science technicians	30	<	(nc)
Miscellaneous textile goods (SIC 2290):			
Scientific and technical personnel	1,710	3.2	(nc)
Scientists	270	.5	(nc)
Chemists	110	.2	5
All other physical scientists	20	<	(nc)
Computer analysts	140	.3	(nc)
Managers of scientific and technical personnel	170	.3	2
Engineers	680	1.3	(nc)
Industrial	200	.4	<
Mechanical	220	.4	0
Sales	100	.2	0
Other, n.e.c	160	.3	(nc)
Technicians	590	1.1	(nc)
Computer programmers	60	.1	5
All other engineering technicians	260	.5	(nc)
Chemical technicians, except health	260	.5	0
All other physical and life science technicians	10	<	(nc)
Men's & boys' suits and coats (SIC 2310):			
Scientific and technical personnel	310	.6	(nc)
Scientists	40	.1	0
Computer analysts	40	.1	0
Managers of scientific and technical personnel	50	.1	0

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Men's & boys' suits and coats (SIC 2310) — continued:			
Engineers	100	0.2	(nc)
Industrial	80	.2	0
Mechanical	10	<	0
Other, n.e.c	10	<	(nc)
Technicians	120	.2	(nc)
Computer programmers	100	.2	0
All other engineering technicians	20	<	(nc)
Men's & boys' furnishings (SIC 2320):			
Scientific and technical personnel	1,920	.6	(nc)
Scientists	280	.1	(nc)
Computer analysts	280	.1	(nc)
Managers of scientific and technical personnel	290	.1	7
Engineers	740	.2	(nc)
Industrial	490	.2	7
Mechanical	190	.1	30
Sales	20	.0	43
Other, n.e.c	40	<	(nc)
Technicians	610	.2	(nc)
Computer programmers	330	.1	6
Mechanical engineering technicians	60	<	5
All other engineering technicians	200	.1	(nc)
Chemical technicians, except health	20	.0	0
Women's and misses' outerwear (SIC 2330):			
Scientific and technical personnel	1,070	.3	(nc)
Scientists	200	<	(nc)
Chemists	10	.0	0
Computer analysts	190	<	(nc)
Managers of scientific and technical personnel	160	<	8
Engineers	390	.1	(nc)
Industrial	260	.1	6
Mechanical	70	<	25
Sales	40	<	26
Other, n.e.c	20	.0	(nc)
Technicians	320	.1	(nc)
Computer programmers	160	<	7
Mechanical engineering technicians	10	.0	47
All other engineering technicians	150	<	(nc)
Women's and children's undergarments (SIC 2340):			
Scientific and technical personnel	710	1.0	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Women's and children's undergarments (SIC 2340) — continued:			
Scientists	100	0.1	(nc)
Computer analysts	100	.1	(nc)
Managers of scientific and technical personnel	90	.1	7
Engineers	240	.4	(nc)
Industrial	190	.3	1
Mechanical	50	.1	11
Technicians	280	.4	(nc)
Computer programmers	100	.1	3
All other engineering technicians	170	.2	(nc)
Chemical technicians, except health	10	<	8
Hats, caps, and millinery (SIC 2350):			
Scientific and technical personnel	70	.4	(nc)
Scientists	10	.1	(nc)
Computer analysts	10	<	(nc)
Managers of scientific and technical personnel	20	.1	0
Engineers	20	.1	(nc)
Industrial	10	<	0
Other, n.e.c	10	<	(nc)
Technicians	20	.1	(nc)
Computer programmers	10	.1	0
All other engineering technicians	10	<	(nc)
Girls' and children's outerwear (SIC 2360):			
Scientific and technical personnel	330	6	(nc)
Scientists	30	<	(nc)
All other physical scientists	10	<	(nc)
Computer analysts	20	<	0
Managers of scientific and technical personnel	40	1	0
Engineers	130	2	(nc)
Industrial	110	2	1
Mechanical	10	<	10
Other, n.e.c	10	<	(nc)
Technicians	130	2	(nc)
Computer programmers	40	1	0
All other engineering technicians	90	2	(nc)
Miscellaneous apparel and accessories (SIC 2380):			
Scientific and technical personnel	170	4	(nc)
Scientists	20	<	0
Computer analysts	20	<	0

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Miscellaneous apparel and accessories (SIC 2380) — continued:			
Managers of scientific and technical personnel	40	0.1	0
Engineers	60	.1	(nc)
Industrial	50	.1	1
Mechanical	10	<	0
Technicians	50	.1	(nc)
Computer programmers	30	.1	0
All other engineering technicians	20	<	(nc)
Misc. fabricated textile products (SIC 2390):			
Scientific and technical personnel	2,030	1.0	(nc)
Scientists	170	.1	(nc)
Computer analysts	170	.1	(nc)
Managers of scientific and technical personnel	260	.1	1
Engineers	890	.4	(nc)
Industrial	430	.2	12
Mechanical	290	.1	4
Sales	50	<	15
Other, n.e.c	120	.1	(nc)
Technicians	710	.3	(nc)
Computer programmers	170	.1	8
Mechanical engineering technicians	50	<	0
All other engineering technicians	440	.2	(nc)
All other physical and life science technicians	50	<	(nc)
Logging (SIC 2410):			
Scientific and technical personnel	780	1.0	(nc)
Scientists	730	.9	(nc)
Foresters and conservation scientists	730	.9	9
Engineers	20	<	(nc)
Other, n.e.c	20	<	(nc)
Technicians	30	<	(nc)
Computer programmers	10	.0	23
All other engineering technicians	20	<	(nc)
Sawmills and planing mills (SIC 2420):			
Scientific and technical personnel	1,910	1.0	(nc)
Scientists	920	.5	(nc)
Physical scientists	10	.0	0
Foresters and conservation scientists	650	.4	10
All other life scientists	40	<	(nc)
Computer analysts	220	.1	(nc)
Managers of scientific and technical personnel	170	.1	3

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Sawmills and planing mills (SIC 2420) — continued:			
Engineers	350	0.2	(nc)
Industrial	100	<	3
Mechanical	80	<	1
Sales	10	.0	39
Other, n.e.c	160	.1	(nc)
Technicians	470	.2	(nc)
Computer programmers	180	.1	16
Drafters	90	<	16
Mechanical engineering technicians	10	.0	0
All other engineering technicians	140	.1	(nc)
Physical and life science technicians	50	<	7
Millwork, plywood & structural members (SIC 2430):			
Scientific and technical personnel	4,710	1.9	(nc)
Scientists	420	.2	(nc)
Physical scientists	10	.0	0
Foresters and conservation scientists	110	<	2
Computer analysts	300	.1	(nc)
Managers of scientific and technical personnel	380	.2	4
Engineers	710	.3	(nc)
Industrial	260	.1	3
Mechanical	250	.1	3
Sales	50	<	0
Other, n.e.c	150	.1	(nc)
Technicians	3,200	1.3	(nc)
Computer programmers	220	.1	5
Drafters	2,520	1.0	5
Mechanical engineering technicians	120	<	3
All other engineering technicians	310	.1	(nc)
Physical and life science technicians	30	<	0
Wood containers (SIC 2440):			
Scientific and technical personnel	70	.1	(nc)
Managers of scientific and technical personnel	10	<	0
Engineers	20	<	(nc)
Sales	10	<	26
Other, n.e.c	10	<	(nc)
Technicians	40	.1	(nc)
Computer programmers	10	<	17
Drafters	30	.1	35
Wood buildings and mobile homes (SIC 2450):			
Scientific and technical personnel	1,590	2.8	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Wood buildings and mobile homes (SIC 2450) — continued:			
Scientists	30	<	4
Computer analysts	30	<	4
Managers of scientific and technical personnel	110	.2	3
Engineers	190	.3	(nc)
Industrial	40	.1	0
Mechanical	50	.1	0
Sales	70	.1	7
Other, n.e.c	30	<	(nc)
Technicians	1,260	2.2	(nc)
Computer programmers	40	.1	12
Drafters	1,130	2.0	2
Mechanical engineering technicians	50	.1	9
All other engineering technicians	40	.1	(nc)
Miscellaneous wood products (SIC 2490):			
Scientific and technical personnel	980	1.1	(nc)
Scientists	170	.2	(nc)
Physical scientists	30	<	0
Foresters and conservation scientists	40	<	4
All other life scientists	10	.0	(nc)
Computer analysts	90	.1	(nc)
Managers of scientific and technical personnel	100	.1	1
Engineers	270	.3	(nc)
Industrial	80	.1	1
Mechanical	100	.1	1
Sales	40	<	41
Other, n.e.c	50	.1	(nc)
Technicians	440	.5	(nc)
Computer programmers	80	.1	2
Drafters	150	.2	10
Mechanical engineering technicians	10	<	0
All other engineering technicians	120	.1	(nc)
Physical and life science technicians	80	.1	2
Household furniture (SIC 2510):			
Scientific and technical personnel	2,750	1.0	(nc)
Scientists	370	.1	(nc)
Computer analysts	370	.1	(nc)
Managers of scientific and technical personnel	390	.1	7
Engineers	810	.3	(nc)
Industrial	420	.2	3
Mechanical	210	.1	4
Sales	40	<	15

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Household furniture (SIC 2510) — continued:			
Engineers — continued			
Other, n.e.c	140	<	(nc)
Technicians	1,180	.4	(nc)
Computer programmers	250	.1	4
Drafters	540	.2	10
Mechanical engineering technicians	40	<	7
All other engineering technicians	350	.1	(nc)
Office furniture (SIC 2520):			
Scientific and technical personnel	1,870	3.1	(nc)
Scientists	120	.2	(nc)
Computer analysts	120	.2	(nc)
Managers of scientific and technical personnel	220	.4	1
Engineers	650	1.1	(nc)
Industrial	330	.5	2
Mechanical	170	.3	3
Sales	30	<	10
Other, n.e.c	120	.2	(nc)
Technicians	880	1.4	(nc)
Computer programmers	100	.2	1
Drafters	580	1.0	6
Mechanical engineering technicians	20	<	0
All other engineering technicians	170	.3	(nc)
Physical and life science technicians	10	<	0
Public building & related furniture (SIC 2530):			
Scientific and technical personnel	1,500	4.2	(nc)
Scientists	60	.2	(nc)
Computer analysts	60	.2	(nc)
Managers of scientific and technical personnel	120	.3	1
Engineers	570	1.6	(nc)
Industrial	260	.7	<
Mechanical	220	.6	4
Sales	30	.1	18
Other, n.e.c	60	.2	(nc)
Technicians	750	2.1	(nc)
Computer programmers	60	.2	0
Drafters	490	1.4	5
Mechanical engineering technicians	80	.2	0
All other engineering technicians	120	.3	(nc)
Partitions and fixtures (SIC 2540):			
Scientific and technical personnel	2,470	3.3	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Partitions and fixtures (SIC 2540) — continued:			
Scientists	150	0.2	(nc)
Physical scientists	20	<	0
Computer analysts	130	.2	(nc)
Managers of scientific and technical personnel	220	.3	2
Engineers	560	.8	(nc)
Industrial	180	.2	2
Mechanical	160	.2	3
Sales	50	.1	5
Other, n.e.c	170	.2	(nc)
Technicians	1,540	2.1	(nc)
Computer programmers	80	.1	1
Drafters	1,310	1.8	3
Mechanical engineering technicians	20	<	0
All other engineering technicians	130	.2	(nc)
Miscellaneous furniture and fixtures (SIC 2590):			
Scientific and technical personnel	1,160	3.2	(nc)
Scientists	140	.4	(nc)
Physical scientists	10	<	0
Computer analysts	130	.4	(nc)
Managers of scientific and technical personnel	130	.4	6
Engineers	320	.9	(nc)
Industrial	100	.3	1
Mechanical	110	.3	7
Sales	30	.1	0
Other, n.e.c	80	.2	(nc)
Technicians	570	1.6	(nc)
Computer programmers	70	.2	4
Drafters	380	1.1	15
All other engineering technicians	120	.3	(nc)
Pulp mills (SIC 2610):			
Scientific and technical personnel	920	6.6	(nc)
Scientists	160	1.1	(nc)
Chemists	60	.4	0
All other physical scientists	20	.2	(nc)
Life scientists	10	.1	0
Computer analysts	70	.5	(nc)
Managers of scientific and technical personnel	70	.5	0
Engineers	500	3.6	(nc)
Chemical	150	1.1	0
Computer	60	.4	0
Electrical/electronics	50	.4	0

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Pulp mills (SIC 2610) — continued:			
Engineers — continued			
Industrial	100	0.7	0
Mechanical	100	.7	0
Other, n.e.c	40	.3	(nc)
Technicians	190	1.4	(nc)
Computer programmers	30	.2	0
Drafters	20	.2	0
All other engineering technicians	40	.2	(nc)
Chemical technicians, except health	70	.5	0
All other physical and life science technicians	30	.2	(nc)
Paper mills (SIC 2620):			
Scientific and technical personnel	9,220	5.3	(nc)
Scientists	1,610	.9	(nc)
Chemists	260	.2	0
All other physical scientists	130	.1	(nc)
Life scientists	100	<	0
Computer analysts	1,120	.6	(nc)
Managers of scientific and technical personnel	850	.5	0
Engineers	4,190	2.4	(nc)
Chemical	940	.5	0
Computer	240	.1	0
Electrical/electronics	590	.3	0
Industrial	540	.3	0
Mechanical	1,150	.7	0
Sales	60	<	0
Other, n.e.c	670	.4	(nc)
Technicians	2,570	1.5	(nc)
Computer programmers	390	.2	0
Drafters	240	.1	0
Electrical/electronics engineering technicians	170	.1	0
Mechanical engineering technicians	80	<	0
All other engineering technicians	460	.3	(nc)
Chemical technicians, except health	990	.6	0
All other physical and life science technicians	240	.1	(nc)
Paperboard mills (SIC 2630):			
Scientific and technical personnel	2,730	5.2	(nc)
Scientists	420	.8	(nc)
Chemists	90	.2	0
All other physical scientists	20	<	(nc)
Life scientists	40	.1	0
Computer analysts	270	.5	(nc)
Managers of scientific and technical personnel	220	.4	1

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Paperboard mills (SIC 2630) — continued:			
Engineers	1,280	2.5	(nc)
Chemical	270	.5	0
Computer	80	.2	0
Electrical/electronics	180	.3	0
Industrial	170	.3	0
Mechanical	380	.7	0
Other, n.e.c	200	.4	(nc)
Technicians	810	1.6	(nc)
Computer programmers	100	.2	0
Drafters	90	.2	0
Electrical/electronics engineering technicians	100	.2	0
Mechanical engineering technicians	60	.1	0
All other engineering technicians	140	.3	(nc)
Chemical technicians, except health	260	.5	0
All other physical and life science technicians	60	.1	(nc)
Paperboard containers and boxes (SIC 2650):			
Scientific and technical personnel	2,160	.9	(nc)
Scientists	270	.1	(nc)
Chemists	20	<	0
All other physical scientists	10	.0	(nc)
Computer analysts	240	.1	(nc)
Managers of scientific and technical personnel	230	.1	7
Engineers	890	.4	(nc)
Chemical	50	<	3
Computer	60	<	6
Electrical/electronics	80	<	26
Industrial	180	.1	6
Mechanical	240	.1	5
Sales	40	<	5
Other, n.e.c	240	.1	(nc)
Technicians	770	.3	(nc)
Computer programmers	200	.1	21
Drafters	200	.1	11
Electrical/electronics engineering technicians	90	<	5
Mechanical engineering technicians	90	<	4
All other engineering technicians	80	<	(nc)
All other physical and life science technicians	110	<	(nc)
Misc. converted paper products (SIC 2670):			
Scientific and technical personnel	12,330	5.0	(nc)
Scientists	2,510	1.0	(nc)
All other physical scientists	840	.3	(nc)
Life scientists	110	<	0
Computer analysts	1,560	.6	(nc)
Managers of scientific and technical personnel	1,420	.6	1

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Misc. converted paper products (SIC 2670) — continued:			
Engineers	4,930	2.0	(nc)
Chemical	330	.1	2
Computer	120	<	5
Electrical/electronics	320	.1	2
Industrial	340	.1	4
Mechanical	620	.3	3
Sales	60	<	40
Other, n.e.c	3,140	1.3	(nc)
Technicians	3,470	1.4	(nc)
Computer programmers	450	.2	4
Drafters	220	.1	6
Electrical/electronics engineering technicians	400	.2	3
Mechanical engineering technicians	170	.1	6
All other engineering technicians	1,200	.5	(nc)
Chemical technicians, except health	440	.2	5
All other physical and life science technicians	590	.2	(nc)
Newspapers (SIC 2710):			
Scientific and technical personnel	4,360	.9	(nc)
Scientists	1,640	.4	(nc)
Computer analysts	1,640	.4	(nc)
Managers of scientific and technical personnel	700	.2	2
Engineers	450	.1	(nc)
Industrial	50	<	14
Mechanical	80	<	0
Other, n.e.c	320	.1	(nc)
Technicians	1,570	.3	(nc)
Computer programmers	1,250	.3	5
Drafters	20	.0	14
All other engineering technicians	290	.1	(nc)
Physical and life science technicians	10	.0	0
Periodicals (SIC 2720):			
Scientific and technical personnel	3,870	3.1	(nc)
Scientists	1,560	1.2	(nc)
Physical scientists	10	.0	0
Life scientists	280	.2	3
Computer analysts	1,270	1.0	(nc)
Managers of scientific and technical personnel	440	.4	4
Engineers	440	.4	(nc)
Industrial	40	<	0
Mechanical	30	<	0
Other, n.e.c	370	.3	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Periodicals (SIC 2720) — continued:			
Technicians	1,430	1.1	(nc)
Computer programmers	990	.8	5
Drafters	50	<	34
All other engineering technicians	370	.3	(nc)
Physical and life science technicians	20	<	0
Books (SIC 2730):			
Scientific and technical personnel	3,260	2.7	(nc)
Scientists	1,640	1.4	(nc)
Computer analysts	1,640	1.4	(nc)
Managers of scientific and technical personnel	410	.3	2
Engineers	150	.1	(nc)
Industrial	50	<	0
Mechanical	40	<	1
Other, n.e.c	60	<	(nc)
Technicians	1,060	.9	(nc)
Computer programmers	920	.8	1
Drafters	60	<	45
All other engineering technicians	80	.1	(nc)
Miscellaneous publishing (SIC 2740):			
Scientific and technical personnel	2,770	3.4	(nc)
Scientists	1,070	1.3	(nc)
Physical scientists	80	.1	2
Life scientists	20	<	44
Computer analysts	970	1.2	(nc)
Managers of scientific and technical personnel	240	.3	3
Engineers	170	.2	(nc)
Industrial	10	<	0
Other, n.e.c	160	.2	(nc)
Technicians	1,290	1.6	(nc)
Computer programmers	570	.7	4
Drafters	550	.7	8
All other engineering technicians	170	.2	(nc)
Commercial printing (SIC 2750):			
Scientific and technical personnel	3,970	.7	(nc)
Scientists	890	.2	(nc)
Physical scientists	50	.0	34
Computer analysts	840	.2	(nc)
Managers of scientific and technical personnel	470	.1	9

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Commercial printing (SIC 2750) — continued:			
Engineers	840	0.1	(nc)
Industrial	370	.1	2
Mechanical	240	<	9
Sales	70	<	15
Other, n.e.c	160	<	(nc)
Technicians	1,770	.3	(nc)
Computer programmers	1,100	.2	10
Drafters	440	.1	12
Mechanical engineering technicians	30	.0	14
All other engineering technicians	150	<	(nc)
Physical and life science technicians	50	.0	22
Manifold business forms (SIC 2760):			
Scientific and technical personnel	990	2.0	(nc)
Scientists	340	.7	(nc)
Physical scientists	20	<	0
Computer analysts	320	.7	(nc)
Managers of scientific and technical personnel	120	.2	2
Engineers	180	.4	(nc)
Industrial	60	.1	1
Other, n.e.c	120	.2	(nc)
Technicians	350	.7	(nc)
Computer programmers	210	.4	2
Drafters	20	<	0
All other engineering technicians	120	.2	(nc)
Greeting cards (SIC 2770):			
Scientific and technical personnel	990	3.7	(nc)
Scientists	540	2.0	(nc)
Physical scientists	10	<	0
Life scientists	30	.1	0
Computer analysts	500	1.9	(nc)
Managers of scientific and technical personnel	40	.1	0
Engineers	220	.8	(nc)
Industrial	80	.3	0
Mechanical	40	.2	0
Other, n.e.c	100	.4	(nc)
Technicians	190	.7	(nc)
Computer programmers	90	.4	2
Drafters	20	.1	5
All other engineering technicians	50	.2	(nc)
Physical and life science technicians	30	.1	0

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Blankbooks and bookbinding (SIC 2780):			
Scientific and technical personnel	740	1.0	(nc)
Scientists	140	.2	(nc)
Computer analysts	140	.2	(nc)
Managers of scientific and technical personnel	130	.2	1
Engineers	180	.2	(nc)
Industrial	80	.1	1
Mechanical	80	.1	0
Other, n.e.c	20	<	(nc)
Technicians	290	.4	(nc)
Computer programmers	200	.3	7
Drafters	40	.1	3
Mechanical engineering technicians	20	<	7
All other engineering technicians	20	<	(nc)
Physical and life science technicians	10	.0	0
Printing trade services (SIC 2790):			
Scientific and technical personnel	930	1.5	(nc)
Scientists	250	.4	(nc)
Physical scientists	10	<	0
Computer analysts	240	.4	(nc)
Managers of scientific and technical personnel	90	.1	2
Engineers	100	.2	(nc)
Industrial	10	<	0
Mechanical	50	.1	3
Sales	20	<	0
Other, n.e.c	20	<	(nc)
Technicians	490	.8	(nc)
Computer programmers	330	.6	8
Drafters	90	.1	24
Mechanical engineering technicians	30	<	0
All other engineering technicians	40	.1	(nc)
Industrial inorganic chemicals (SIC 2810):			
Scientific and technical personnel	27,110	19.0	(nc)
Scientists	4,680	3.3	(nc)
All other mathematicians	110	.1	1
Chemists	2,560	1.8	3
All other physical scientists	510	.4	(nc)
Biological scientists	480	.3	3
Medical scientists	10	.0	0
All other life scientists	30	<	(nc)
Computer analysts	980	.7	(nc)
Managers of scientific and technical personnel	2,200	1.5	1

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Industrial inorganic chemicals (SIC 2810) — continued:			
Engineers	12,880	9.0	(nc)
Chemical	4,300	3.0	1
Civil	420	.3	1
Computer	760	.5	1
Electrical/electronics	990	.7	<
Industrial	520	.4	1
Mechanical	1,720	1.2	1
Safety	330	.2	3
Sales	340	.2	16
Other, n.e.c	3,500	2.5	(nc)
Technicians	7,350	5.1	(nc)
Computer programmers	320	.2	2
Drafters	560	.4	1
Electrical/electronics engineering technicians	470	.3	1
Mechanical engineering technicians	270	.2	3
All other engineering technicians	720	.5	(nc)
Biological science technicians	350	.2	1
Chemical technicians, except health	3,570	2.5	1
All other physical and life science technicians	1,090	.8	(nc)
Plastics materials and synthetics (SIC 2820):			
Scientific and technical personnel	26,890	14.9	(nc)
Scientists	4,340	2.4	(nc)
All other mathematicians	30	<	0
Chemists	2,170	1.2	1
All other physical scientists	320	.2	(nc)
Biological scientists	50	<	38
Medical scientists	10	.0	0
All other life scientists	210	.1	(nc)
Computer analysts	1,550	.8	(nc)
Managers of scientific and technical personnel	1,630	.9	1
Engineers	10,350	5.7	(nc)
Chemical	4,610	2.6	<
Civil	270	.1	0
Computer	250	.1	<
Electrical/electronics	820	.5	0
Industrial	400	.2	1
Mechanical	2,050	1.1	1
Metallurgical/metallurgists	120	.1	0
Safety	380	.2	1
Sales	310	.2	7
Other, n.e.c	1,140	.6	(nc)
Technicians	10,570	5.9	(nc)
Computer programmers	480	.3	1
Drafters	340	.2	1
Electrical/electronics engineering technicians	840	.5	0
Mechanical engineering technicians	450	.2	<
All other engineering technicians	1,290	.7	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Plastics materials and synthetics (SIC 2820) — continued:			
Technicians — continued			
Biological science technicians	260	0.1	0
Chemical technicians, except health	6,240	3.5	<
All other physical and life science technicians	670	.4	(nc)
Drugs (SIC 2830):			
Scientific and technical personnel	74,050	24.2	(nc)
Scientists	41,020	13.4	(nc)
All other mathematicians	740	.2	0
Chemists	13,090	4.3	2
All other physical scientists	790	.2	(nc)
Biological scientists	14,740	4.8	1
Medical scientists	4,520	1.5	<
All other life scientists	1,630	.5	(nc)
Computer analysts	5,510	1.8	(nc)
Managers of scientific and technical personnel	5,940	1.9	3
Engineers	7,230	2.3	(nc)
Chemical	1,900	.6	1
Civil	270	.1	0
Computer	530	.2	1
Electrical/electronics	200	.1	2
Industrial	1,430	.5	1
Mechanical	930	.3	2
Metallurgical/metallurgists	30	<	0
Safety	250	.1	0
Sales	60	<	0
Other, n.e.c	1,630	.5	(nc)
Technicians	19,860	6.5	(nc)
Computer programmers	1,680	.6	4
Drafters	300	.1	1
Electrical/electronics engineering technicians	1,050	.3	1
Mechanical engineering technicians	600	.2	1
All other engineering technicians	900	.3	(nc)
Biological science technicians	5,580	1.8	4
Chemical technicians, except health	7,750	2.5	1
All other physical and life science technicians	2,000	.6	(nc)
Soap, cleaners, and toilet goods (SIC 2840):			
Scientific and technical personnel	13,420	8.2	(nc)
Scientists	5,670	3.5	(nc)
All other mathematicians	40	<	0
Chemists	3,760	2.3	3
All other physical scientists	100	.1	(nc)
Biological scientists	270	.2	5
Medical scientists	20	<	0
All other life scientists	90	<	(nc)
Computer analysts	1,390	.8	(nc)

See explanatory information, if any, and SOURCE at end of table.

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Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Soap, cleaners, and toilet goods (SIC 2840) — continued:			
Managers of scientific and technical personnel	1,640	1.0	2
Engineers	2,340	1.4	(nc)
Chemical	700	.4	7
Civil	60	<	9
Computer	80	<	2
Electrical/electronics	130	.1	0
Industrial	320	.2	2
Mechanical	370	.2	5
Safety	80	<	3
Sales	90	<	18
Other, n.e.c	510	.3	(nc)
Technicians	3,770	2.3	(nc)
Computer programmers	620	.4	1
Drafters	110	.1	1
Electrical/electronics engineering technicians	130	.1	0
Mechanical engineering technicians	90	<	0
All other engineering technicians	200	.1	(nc)
Biological science technicians	150	.1	4
Chemical technicians, except health	2,340	1.5	4
All other physical and life science technicians	130	.1	(nc)
Paints and allied products (SIC 2850):			
Scientific and technical personnel	6,600	10.6	(nc)
Scientists	2,420	3.9	(nc)
Chemists	2,140	3.5	3
All other physical scientists	70	.1	(nc)
Computer analysts	210	.3	(nc)
Managers of scientific and technical personnel	400	.6	4
Engineers	990	1.6	(nc)
Chemical	330	.5	4
Civil	10	<	0
Computer	20	<	17
Electrical/electronics	20	<	4
Industrial	170	.3	1
Mechanical	150	.2	6
Metallurgical/metallurgists	10	<	33
Safety	70	.1	2
Sales	140	.2	8
Other, n.e.c	70	.1	(nc)
Technicians	2,790	4.5	(nc)
Computer programmers	240	.4	4
Drafters	10	<	9
Electrical/electronics engineering technicians	30	<	7
Mechanical engineering technicians	10	<	0
All other engineering technicians	100	.2	(nc)
Chemical technicians, except health	2,300	3.7	4
All other physical and life science technicians	100	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Industrial organic chemicals (SIC 2860):			
Scientific and technical personnel	37,760	22.8	(nc)
Scientists	8,560	5.2	(nc)
All other mathematicians	40	<	0
Chemists	5,790	3.5	1
All other physical scientists	720	.4	(nc)
Biological scientists	580	.4	10
Medical scientists	60	<	0
All other life scientists	260	.2	(nc)
Computer analysts	1,110	.7	(nc)
Managers of scientific and technical personnel	1,710	1.0	2
Engineers	11,390	6.9	(nc)
Chemical	5,630	3.4	1
Civil	310	.2	1
Computer	210	.1	2
Electrical/electronics	1,170	.7	1
Industrial	860	.5	<
Mechanical	1,860	1.1	1
Metallurgical/metallurgists	90	<	0
Safety	380	.2	3
Sales	110	1	5
Other, n.e.c	770	.5	(nc)
Technicians	16,100	9.8	(nc)
Computer programmers	640	.4	2
Drafters	650	.4	1
Electrical/electronics engineering technicians	1,700	1.0	<
Mechanical engineering technicians	490	.3	1
All other engineering technicians	2,020	1.2	(nc)
Biological science technicians	380	.2	23
Chemical technicians, except health	9,900	6.0	1
All other physical and life science technicians	320	.2	(nc)
Agricultural chemicals (SIC 2870):			
Scientific and technical personnel	6,440	10.4	(nc)
Scientists	1,840	3.0	(nc)
All other mathematicians	10	.0	0
Chemists	980	1.6	1
All other physical scientists	240	.4	(nc)
Biological scientists	340	.6	2
All other life scientists	30	<	(nc)
Computer analysts	240	.4	(nc)
Managers of scientific and technical personnel	350	.6	1
Engineers	1,740	2.8	(nc)
Chemical	770	1.2	1
Civil	30	<	0
Computer	30	<	0
Electrical/electronics	80	1	0
Industrial	260	4	1

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Agricultural chemicals (SIC 2870) — continued:			
Engineers — continued			
Mechanical	240	0.4	1
Metallurgical/metallurgists	30	<	0
Safety	110	.2	2
Sales	40	.1	6
Other, n.e.c	150	.2	(nc)
Technicians	2,510	4.0	(nc)
Computer programmers	120	.2	1
Drafters	140	.2	0
Electrical/electronics engineering technicians	250	.4	0
Mechanical engineering technicians	40	.1	0
All other engineering technicians	250	.4	(nc)
Biological science technicians	250	.4	8
Chemical technicians, except health	1,420	2.3	1
All other physical and life science technicians	40	<	(nc)
Miscellaneous chemical products (SIC 2890):			
Scientific and technical personnel	12,890	13.1	(nc)
Scientists	3,740	3.8	(nc)
Chemists	2,670	2.7	4
All other physical scientists	230	.2	(nc)
Biological scientists	130	.1	13
All other life scientists	80	.1	(nc)
Computer analysts	630	.6	(nc)
Managers of scientific and technical personnel	850	.9	5
Engineers	3,060	3.1	(nc)
Chemical	1,000	1.0	7
Civil	60	.1	0
Computer	80	.1	5
Electrical/electronics	100	.1	2
Industrial	270	.3	2
Mechanical	600	.6	4
Metallurgical/metallurgists	50	<	38
Safety	140	.1	3
Sales	450	.5	9
Other, n.e.c	310	.3	(nc)
Technicians	5,240	5.4	(nc)
Computer programmers	250	.2	12
Drafters	370	.4	27
Electrical/electronics engineering technicians	170	.2	2
Mechanical engineering technicians	130	.1	9
All other engineering technicians	370	.4	(nc)
Biological science technicians	20	<	20
Chemical technicians, except health	3,610	3.7	5
All other physical and life science technicians	320	.3	(nc)
Petroleum refining (SIC 2910):			
Scientific and technical personnel	22,210	17.4	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Petroleum refining (SIC 2910) — continued:			
Scientists	3,500	2.7	(nc)
Chemists	1,720	1.4	1
Geologists, geophysicists, and earth scientists	300	.2	0
All other physical scientists	450	.4	(nc)
Life scientists	90	.1	0
Computer analysts	940	.7	(nc)
Managers of scientific and technical personnel	1,140	.9	2
Engineers	10,140	7.9	(nc)
Chemical	4,140	3.3	1
Civil	510	.4	0
Computer	590	.5	1
Electrical/electronics	620	.5	<
Industrial	350	.3	1
Mechanical	1,480	1.2	1
Safety	570	.4	5
Sales	40	<	0
Other, n.e.c	1,840	1.4	(nc)
Technicians	7,430	5.8	(nc)
Computer programmers	910	.7	1
Drafters	540	.4	1
Electrical/electronics engineering technicians	440	.3	0
Mechanical engineering technicians	250	.2	0
All other engineering technicians	1,450	1.1	(nc)
Chemical technicians, except health	3,120	2.4	1
All other physical and life science technicians	720	.6	(nc)
Asphalt paving and roofing materials (SIC 2950):			
Scientific and technical personnel	660	2.2	(nc)
Scientists	120	.4	(nc)
Chemists	90	.3	5
Computer analysts	30	.1	0
Managers of scientific and technical personnel	110	.4	5
Engineers	140	.5	(nc)
Chemical	10	<	0
Civil	10	<	0
Computer	10	<	0
Electrical/electronics	10	<	0
Industrial	40	.1	0
Mechanical	40	.1	7
Sales	10	<	0
Other, n.e.c	10	<	(nc)
Technicians	290	1.0	(nc)
Computer programmers	40	.2	2
Drafters	10	<	0
Electrical/electronics engineering technicians	10	<	0
All other engineering technicians	10	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Asphalt paving and roofing materials (SIC 2950) — continued:			
Technicians — continued			
Chemical technicians, except health	200	0.7	16
All other physical and life science technicians	20	<	(nc)
Misc. petroleum and coal products (SIC 2990):			
Scientific and technical personnel	1,180	9.3	(nc)
Scientists	320	2.6	(nc)
Chemists	300	2.4	4
Computer analysts	20	.2	(nc)
Managers of scientific and technical personnel	130	1.0	11
Engineers	260	2.0	(nc)
Chemical	60	.5	0
Civil	10	<	0
Computer	10	.1	0
Mechanical	50	.4	23
Safety	20	.2	0
Sales	60	.5	0
Other, n.e.c	50	.4	(nc)
Technicians	470	3.7	(nc)
Computer programmers	30	.2	3
Electrical/electronics engineering technicians	10	.1	0
All other engineering technicians	30	.3	(nc)
Chemical technicians, except health	350	2.7	3
All other physical and life science technicians	50	.4	(nc)
Tires and inner tubes (SIC 3010):			
Scientific and technical personnel	3,670	4.4	(nc)
Scientists	340	.4	(nc)
Chemists	190	.2	0
All other physical scientists	10	.0	(nc)
Computer analysts	140	.2	(nc)
Managers of scientific and technical personnel	350	.4	2
Engineers	1,490	1.8	(nc)
Chemical	290	.4	0
Computer	40	<	0
Electrical/electronics	150	.2	0
Industrial	240	.3	0
Mechanical	480	.6	0
Sales	30	<	0
Other, n.e.c	260	.3	(nc)
Technicians	1,490	1.8	(nc)
Computer programmers	260	.3	2
Drafters	170	.2	0
Electrical/electronics engineering technicians	170	.2	0
Mechanical engineering technicians	230	.3	0

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Tires and inner tubes (SIC 3010) — continued:			
Technicians — continued			
All other engineering technicians	310	0.4	(nc)
Chemical technicians, except health	280	.3	1
All other physical and life science technicians	70	.1	(nc)
Rubber and plastics footwear (SIC 3020):			
Scientific and technical personnel	240	2.0	(nc)
Scientists	70	.6	(nc)
Chemists	10	.1	0
Computer analysts	60	.5	(nc)
Managers of scientific and technical personnel	50	.5	0
Engineers	70	.5	(nc)
Chemical	10	.1	0
Electrical/electronics	10	<	0
Industrial	20	.2	0
Mechanical	20	.2	0
Other, n.e.c	10	.1	(nc)
Technicians	50	.5	(nc)
Computer programmers	10	.1	0
All other engineering technicians	20	.2	(nc)
Chemical technicians, except health	20	.1	0
Hose & belting & gaskets & packing (SIC 3050):			
Scientific and technical personnel	3,020	4.9	(nc)
Scientists	250	.4	(nc)
Chemists	100	.2	0
All other physical scientists	10	<	(nc)
Life scientists	10	<	0
Computer analysts	130	.2	(nc)
Managers of scientific and technical personnel	340	.6	2
Engineers	1,420	2.3	(nc)
Chemical	110	.2	3
Computer	40	.1	0
Electrical/electronics	40	.1	1
Industrial	220	.4	1
Mechanical	640	1.1	1
Sales	160	.3	1
Other, n.e.c	210	.4	(nc)
Technicians	1,010	1.6	(nc)
Computer programmers	70	.1	1
Drafters	250	.4	3
Electrical/electronics engineering technicians	50	.1	2
Mechanical engineering technicians	130	.2	1
All other engineering technicians	260	.4	(nc)
Chemical technicians, except health	220	.4	1

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Hose & belting & gaskets & packing (SIC 3050) — continued:			
Technicians — continued			
All other physical and life science technicians	30	<	(nc)
Fabricated rubber products, nec (SIC 3060):			
Scientific and technical personnel	4,820	4.5	(nc)
Scientists	500	.4	(nc)
Chemists	260	.2	5
All other physical scientists	40	<	(nc)
Life scientists	20	<	0
Computer analysts	180	.2	(nc)
Managers of scientific and technical personnel	510	.5	3
Engineers	2,030	1.9	(nc)
Chemical	320	.3	7
Computer	40	<	10
Electrical/electronics	90	.1	1
Industrial	340	.3	5
Mechanical	820	.8	3
Sales	130	.1	5
Other, n.e.c	290	.3	(nc)
Technicians	1,780	1.7	(nc)
Computer programmers	120	.1	7
Drafters	260	.2	7
Electrical/electronics engineering technicians	100	.1	1
Mechanical engineering technicians	350	.3	1
All other engineering technicians	380	.4	(nc)
Chemical technicians, except health	540	.5	5
All other physical and life science technicians	30	<	(nc)
Miscellaneous plastics products, nec (SIC 3080):			
Scientific and technical personnel	22,110	3.4	(nc)
Scientists	1,520	.2	(nc)
Chemists	440	.1	13
All other physical scientists	220	<	(nc)
Life scientists	20	.0	33
Computer analysts	840	.1	(nc)
Managers of scientific and technical personnel	3,100	.5	6
Engineers	9,750	1.5	(nc)
Chemical	1,130	.2	8
Computer	240	<	13
Electrical/electronics	550	.1	6
Industrial	1,650	.2	6
Mechanical	4,020	.6	3
Sales	890	.1	8
Other, n.e.c	1,270	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Miscellaneous plastics products, nec (SIC 3080) — continued:			
Technicians	7,740	1.2	(nc)
Computer programmers	660	.1	4
Drafters	2,110	.3	11
Electrical/electronics engineering technicians	720	.1	9
Mechanical engineering technicians	790	.1	8
All other engineering technicians	1,820	.3	(nc)
Chemical technicians, except health	1,560	.2	5
All other physical and life science technicians	80	<	(nc)
Leather tanning and finishing (SIC 3110):			
Scientific and technical personnel	450	2.7	(nc)
Scientists	130	.7	(nc)
Chemists	50	.3	0
All other physical scientists	40	.2	(nc)
Computer analysts	40	.2	(nc)
Managers of scientific and technical personnel	60	.3	0
Engineers	70	.4	(nc)
Industrial	30	.2	0
Mechanical	30	.2	0
Other, n.e.c	10	<	(nc)
Technicians	190	1.2	(nc)
Computer programmers	20	.1	0
All other engineering technicians	30	.2	(nc)
Chemical technicians, except health	130	.8	0
All other physical and life science technicians	10	.1	(nc)
Footwear cut stock (SIC 3130):			
Scientific and technical personnel	10	.2	(nc)
Engineers	10	.2	(nc)
Other, n.e.c	10	.2	(nc)
Footwear, except rubber (SIC 3140):			
Scientific and technical personnel	650	.9	(nc)
Scientists	190	.2	(nc)
All other physical scientists	10	.0	(nc)
Computer analysts	180	.2	(nc)
Managers of scientific and technical personnel	100	.1	2
Engineers	190	.3	(nc)
Industrial	140	.2	<
Mechanical	40	.1	0
Other, n.e.c	10	<	(nc)
Technicians	170	.2	(nc)
Computer programmers	80	.1	2
All other engineering technicians	80	.1	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Footwear, except rubber (SIC 3140) — continued:			
Technicians — continued			
All other physical and life science technicians	10	0.0	(nc)
Leather gloves and mittens (SIC 3150):			
Scientific and technical personnel	10	.4	(nc)
Scientists	10	.3	(nc)
Computer analysts	10	.3	(nc)
Luggage (SIC 3160):			
Scientific and technical personnel	170	1.6	(nc)
Scientists	20	.2	(nc)
Computer analysts	20	.2	(nc)
Managers of scientific and technical personnel	20	.2	0
Engineers	70	.6	(nc)
Industrial	30	.2	0
Other, n.e.c	40	.4	(nc)
Technicians	60	.6	(nc)
Computer programmers	20	.2	0
All other engineering technicians	30	.3	(nc)
All other physical and life science technicians	10	.1	(nc)
Handbags and personal leather goods (SIC 3170):			
Scientific and technical personnel	40	.3	(nc)
Managers of scientific and technical personnel	10	.1	0
Engineers	10	.1	0
Industrial	10	.1	0
Technicians	20	.1	(nc)
Computer programmers	10	.1	0
All other engineering technicians	10	<	(nc)
Leather goods, nec (SIC 3190):			
Scientific and technical personnel	50	.5	(nc)
Scientists	20	.2	(nc)
Computer analysts	20	.2	(nc)
Managers of scientific and technical personnel	10	.1	0
Engineers	20	.2	(nc)
Other, n.e.c	20	.2	(nc)
Flat glass (SIC 3210):			
Scientific and technical personnel	720	4.7	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Flat glass (SIC 3210) — continued:			
Scientists	80	0.5	(nc)
Chemists	10	<	0
Computer analysts	70	.4	(nc)
Managers of scientific and technical personnel	20	.2	0
Engineers	430	2.8	(nc)
Computer	10	<	0
Electrical/electronics	40	.2	0
Industrial	260	1.7	0
Mechanical	50	.3	0
Metallurgical/metallurgists	30	.2	0
Other, n.e.c	40	.2	(nc)
Technicians	190	1.3	(nc)
Computer programmers	40	.3	0
Drafters	10	.1	0
Electrical/electronics engineering technicians	60	.4	0
Civil engineering technicians	20	.1	0
All other engineering technicians	60	.4	(nc)
Glass and glassware, pressed or blown (SIC 3220):			
Scientific and technical personnel	3,390	4.1	(nc)
Scientists	370	.4	(nc)
All other physical scientists	240	.3	(nc)
Life scientists	20	<	0
Computer analysts	110	.1	0
Managers of scientific and technical personnel	230	.3	0
Engineers	1,370	1.7	(nc)
Chemical	90	.1	0
Computer	120	.1	0
Electrical/electronics	200	.2	0
Industrial	150	.2	0
Mechanical	300	.4	0
Metallurgical/metallurgists	280	.4	0
Sales	20	<	0
Other, n.e.c	210	.3	(nc)
Technicians	1,420	1.7	(nc)
Computer programmers	110	.1	(nc)
Drafters	140	.2	4
Electrical/electronics engineering technicians	200	.2	0
Mechanical engineering technicians	180	.2	0
All other engineering technicians	570	.7	(nc)
Chemical technicians, except health	180	.2	0
All other physical and life science technicians	40	<	(nc)
Products of purchased glass (SIC 3230):			
Scientific and technical personnel	2,860	4.7	(nc)

See explanatory information, if any, and SOURCE at end of table.

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Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Products of purchased glass (SIC 3230) — continued:			
Scientists	280	0.4	(nc)
Chemists	50	.1	0
All other physical scientists	110	.2	(nc)
Computer analysts	120	.2	(nc)
Managers of scientific and technical personnel	320	.5	1
Engineers	1,400	2.3	(nc)
Chemical	20	<	2
Computer	50	.1	1
Electrical/electronics	100	.2	<
Industrial	290	.5	0
Mechanical	250	.4	1
Metallurgical/metallurgists	40	.1	0
Sales	130	.2	3
Other, n.e.c	520	.9	(nc)
Technicians	860	1.4	(nc)
Computer programmers	80	.1	(nc)
Drafters	160	.3	4
Electrical/electronics engineering technicians	100	.2	0
Mechanical engineering technicians	220	.4	0
All other engineering technicians	250	.4	(nc)
Chemical technicians, except health	20	<	3
All other physical and life science technicians	30	<	(nc)
Cement, hydraulic (SIC 3240):			
Scientific and technical personnel	1,220	6.6	(nc)
Scientists	250	1.4	(nc)
Chemists	180	1.0	2
All other physical scientists	20	.1	(nc)
Computer analysts	50	.3	(nc)
Managers of scientific and technical personnel	60	.3	4
Engineers	340	1.8	(nc)
Chemical	40	.2	9
Civil	30	.2	0
Computer	20	.1	0
Electrical/electronics	80	.4	4
Industrial	30	.2	0
Mechanical	70	.4	6
Metallurgical/metallurgists	10	<	0
Sales	30	.2	4
Other, n.e.c	30	.2	(nc)
Technicians	570	3.0	(nc)
Computer programmers	40	.2	0
Drafters	30	.2	4
Electrical/electronics engineering technicians	40	.2	7
Mechanical engineering technicians	10	<	0
All other engineering technicians	60	.3	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Cement, hydraulic (SIC 3240) — continued:			
Technicians — continued			
Chemical technicians, except health	330	1.8	6
All other physical and life science technicians	60	.3	(nc)
Structural clay products (SIC 3250):			
Scientific and technical personnel	770	2.3	(nc)
Scientists	80	.2	(nc)
Chemists	10	<	52
All other physical scientists	10	<	(nc)
Computer analysts	60	.2	(nc)
Managers of scientific and technical personnel	90	.3	3
Engineers	320	1.0	(nc)
Chemical	20	<	7
Electrical/electronics	10	<	0
Industrial	50	.2	3
Mechanical	40	.1	8
Metallurgical/metallurgists	120	.4	4
Sales	50	.2	5
Other, n.e.c	30	.1	(nc)
Technicians	280	.8	(nc)
Computer programmers	20	.1	12
Drafters	60	.2	10
Electrical/electronics engineering technicians	10	<	8
Mechanical engineering technicians	10	<	0
All other engineering technicians	90	.3	(nc)
Chemical technicians, except health	80	.2	3
All other physical and life science technicians	10	<	(nc)
Pottery and related products (SIC 3260):			
Scientific and technical personnel	1,670	4.2	(nc)
Scientists	130	.3	(nc)
Chemists	30	.1	0
All other physical scientists	20	.1	(nc)
Computer analysts	80	.2	(nc)
Managers of scientific and technical personnel	120	.3	<
Engineers	750	1.9	(nc)
Chemical	40	.1	2
Civil	10	<	0
Computer	20	<	0
Electrical/electronics	100	.3	0
Industrial	90	.2	0
Mechanical	90	.2	1
Metallurgical/metallurgists	170	.4	1
Sales	140	.3	1
Other, n.e.c	90	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Pottery and related products (SIC 3260) — continued:			
Technicians	670	1.7	(nc)
Computer programmers	60	.2	0
Drafters	90	.2	0
Electrical/electronics engineering technicians	90	.2	0
Mechanical engineering technicians	60	.2	0
All other engineering technicians	290	.8	(nc)
Chemical technicians, except health	50	.1	2
All other physical and life science technicians	30	.1	(nc)
Concrete, gypsum, and plaster products (SIC 3270):			
Scientific and technical personnel	2,630	1.2	(nc)
Scientists	240	.1	(nc)
Chemists	70	<	13
All other physical scientists	20	.0	(nc)
Computer analysts	150	.1	(nc)
Managers of scientific and technical personnel	260	.1	4
Engineers	740	.3	(nc)
Chemical	30	<	24
Civil	310	.2	14
Computer	20	<	10
Electrical/electronics	30	<	6
Industrial	80	<	5
Mechanical	60	<	16
Metallurgical/metallurgists	10	.0	7
Sales	140	.1	7
Other, n.e.c	60	<	(nc)
Technicians	1,390	.7	(nc)
Computer programmers	70	<	10
Drafters	970	.5	3
Electrical/electronics engineering technicians	50	<	0
Mechanical engineering technicians	30	<	31
Civil engineering technicians	80	<	8
All other engineering technicians	80	<	(nc)
Chemical technicians, except health	100	<	6
All other physical and life science technicians	10	.0	(nc)
Cut stone and stone products (SIC 3280):			
Scientific and technical personnel	400	2.8	(nc)
Managers of scientific and technical personnel	10	.1	0
Engineers	30	.2	(nc)
Industrial	10	.1	15
Mechanical	10	.1	20
Other, n.e.c	10	.1	(nc)
Technicians	360	2.6	(nc)
Computer programmers	10	.1	0
Drafters	340	2.4	6

See explanatory information, if any, and SOURCE at end of table.

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Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Cut stone and stone products (SIC 3280) — continued:			
Technicians — continued			
All other engineering technicians	10	<	(nc)
Misc. nonmetallic mineral products (SIC 3290):			
Scientific and technical personnel	3,640	4.8	(nc)
Scientists	380	.5	(nc)
Chemists	120	.2	0
All other physical scientists	30	<	(nc)
Computer analysts	230	.3	(nc)
Managers of scientific and technical personnel	360	.5	1
Engineers	1,510	2.0	(nc)
Chemical	120	.2	2
Civil	20	<	18
Computer	30	<	3
Electrical/electronics	80	.1	0
Industrial	290	.4	4
Mechanical	320	.4	5
Metallurgical/metallurgists	310	.4	<
Sales	220	.3	1
Other, n.e.c	120	.2	(nc)
Technicians	1,390	1.8	(nc)
Computer programmers	220	.3	(nc)
Drafters	180	.2	4
Electrical/electronics engineering technicians	70	.1	2
Mechanical engineering technicians	90	.1	2
Civil engineering technicians	10	<	0
All other engineering technicians	430	.6	(nc)
Chemical technicians, except health	340	.4	1
All other physical and life science technicians	50	.1	(nc)
Blast furnace and basic steel products (SIC 3310):			
Scientific and technical personnel	14,390	5.6	(nc)
Scientists	1,800	.7	(nc)
Chemists	360	.1	4
All other physical scientists	80	<	(nc)
Computer analysts	1,360	.5	(nc)
Managers of scientific and technical personnel	1,040	.4	3
Engineers	6,520	2.6	(nc)
Computer	630	.2	1
Electrical/electronics	530	.2	1
Industrial	840	.3	2
Mechanical	990	.4	1
Metallurgical/metallurgists	1,410	.6	7
Safety	230	.1	1
Sales	170	.1	10
Other, n.e.c	1,720	.7	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Blast furnace and basic steel products (SIC 3310) — continued:			
Technicians	5,030	2.0	(nc)
Computer programmers	420	.2	2
Drafters	670	.3	6
Electrical/electronics engineering technicians	500	.2	5
Mechanical engineering technicians	320	.1	1
All other engineering technicians	2,040	.8	(nc)
Chemical technicians, except health	980	.4	1
All other physical and life science technicians	100	<	(nc)
Iron and steel foundries (SIC 3320):			
Scientific and technical personnel	4,450	3.6	(nc)
Scientists	250	.2	(nc)
Chemists	40	<	1
All other physical scientists	10	.0	(nc)
Life scientists	10	.0	60
Computer analysts	190	.2	(nc)
Managers of scientific and technical personnel	330	.3	4
Engineers	2,310	1.9	(nc)
Computer	90	.1	2
Electrical/electronics	60	<	8
Industrial	510	.4	1
Mechanical	410	.3	2
Metallurgical/metallurgists	510	.4	2
Safety	100	.1	9
Sales	210	.2	3
Other, n.e.c	420	.3	(nc)
Technicians	1,560	1.2	(nc)
Computer programmers	150	.1	4
Drafters	210	.2	5
Electrical/electronics engineering technicians	120	.1	1
Mechanical engineering technicians	110	.1	2
All other engineering technicians	770	.6	(nc)
Chemical technicians, except health	160	.1	5
All other physical and life science technicians	40	<	(nc)
Primary nonferrous metals (SIC 3330):			
Scientific and technical personnel	3,290	7.6	(nc)
Scientists	440	1.0	(nc)
Chemists	210	.5	1
All other physical scientists	50	.1	(nc)
Computer analysts	180	.4	(nc)
Managers of scientific and technical personnel	240	.6	1
Engineers	1,430	3.3	(nc)
Computer	110	.2	0
Electrical/electronics	230	.5	0
Industrial	210	.5	1

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Primary nonferrous metals (SIC 3330) — continued:			
Engineers — continued			
Mechanical	280	0.6	0
Metallurgical/metallurgists	250	.6	1
Safety	60	.1	2
Sales	10	<	0
Other, n.e.c	280	.6	(nc)
Technicians	1,180	2.7	(nc)
Computer programmers	70	.2	0
Drafters	130	.3	0
Electrical/electronics engineering technicians	120	.3	0
Mechanical engineering technicians	50	.1	0
All other engineering technicians	290	.6	(nc)
Chemical technicians, except health	390	.9	1
All other physical and life science technicians	130	.3	(nc)
Secondary nonferrous metals (SIC 3340):			
Scientific and technical personnel	930	5.9	(nc)
Scientists	160	1.0	(nc)
Chemists	100	.6	0
All other physical scientists	20	.1	(nc)
Computer analysts	40	.3	(nc)
Managers of scientific and technical personnel	90	.6	5
Engineers	340	2.2	(nc)
Computer	10	.1	0
Electrical/electronics	40	.2	0
Industrial	40	.3	0
Mechanical	40	.2	0
Metallurgical/metallurgists	150	1.0	3
Safety	20	.1	0
Other, n.e.c	40	.2	(nc)
Technicians	340	2.2	(nc)
Computer programmers	30	.2	0
Drafters	30	.2	25
Electrical/electronics engineering technicians	10	<	0
Mechanical engineering technicians	10	.1	0
All other engineering technicians	50	.3	(nc)
All other physical and life science technicians	210	1.3	(nc)
Nonferrous rolling and drawing (SIC 3350):			
Scientific and technical personnel	11,550	6.9	(nc)
Scientists	1,100	.6	(nc)
Chemists	230	.1	2
All other physical scientists	80	<	(nc)
Computer analysts	790	.5	(nc)
Managers of scientific and technical personnel	980	.6	2

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Nonferrous rolling and drawing (SIC 3350) — continued:			
Engineers	5,640	3.4	(nc)
Computer	370	.2	1
Electrical/electronics	850	.5	1
Industrial	610	.4	3
Mechanical	1,020	.6	1
Metallurgical/metallurgists	780	.5	3
Safety	140	.1	1
Sales	330	.2	1
Other, n.e.c	1,540	.9	(nc)
Technicians	3,830	2.3	(nc)
Computer programmers	300	.2	<
Drafters	800	.5	2
Electrical/electronics engineering technicians	730	.4	1
Mechanical engineering technicians	290	.2	1
All other engineering technicians	1,010	.6	(nc)
Chemical technicians, except health	600	.4	1
All other physical and life science technicians	100	<	(nc)
Nonferrous foundries (castings) (SIC 3360):			
Scientific and technical personnel	2,510	3.2	(nc)
Scientists	100	.1	(nc)
Chemists	10	<	4
All other physical scientists	20	<	(nc)
Computer analysts	70	.1	(nc)
Managers of scientific and technical personnel	280	.4	2
Engineers	1,320	1.7	(nc)
Computer	40	<	4
Electrical/electronics	90	.1	29
Industrial	240	.3	1
Mechanical	410	.5	2
Metallurgical/metallurgists	200	.2	1
Safety	30	<	5
Sales	130	.2	5
Other, n.e.c	180	.2	(nc)
Technicians	810	1.0	(nc)
Computer programmers	70	.1	9
Drafters	200	.3	3
Electrical/electronics engineering technicians	30	<	0
Mechanical engineering technicians	140	.2	4
All other engineering technicians	340	.4	(nc)
Chemical technicians, except health	30	<	16
Miscellaneous primary metal products (SIC 3390):			
Scientific and technical personnel	1,590	5.8	(nc)
Scientists	130	.5	(nc)
Chemists	100	.4	0
All other physical scientists	10	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Miscellaneous primary metal products (SIC 3390) — continued:			
Scientists — continued			
Computer analysts	20	0.1	(nc)
Managers of scientific and technical personnel	210	.8	6
Engineers	760	2.8	(nc)
Computer	20	<	0
Electrical/electronics	40	.1	5
Industrial	60	.2	23
Mechanical	90	.4	1
Metallurgical/metallurgists	370	1.4	11
Safety	30	.1	0
Sales	100	.4	2
Other, n.e.c	50	.2	(nc)
Technicians	490	1.8	(nc)
Computer programmers	40	.1	31
Drafters	80	.3	6
Electrical/electronics engineering technicians	30	.1	0
Mechanical engineering technicians	30	.1	0
All other engineering technicians	110	.4	(nc)
Chemical technicians, except health	190	.7	0
All other physical and life science technicians	10	<	(nc)
Metal cans and shipping containers (SIC 3410):			
Scientific and technical personnel	1,070	2.2	(nc)
Scientists	190	.4	(nc)
Computer analysts	190	.4	(nc)
Managers of scientific and technical personnel	160	.3	3
Engineers	430	.9	(nc)
Civil	10	<	11
Computer	10	<	18
Electrical/electronics	40	.1	3
Industrial	40	.1	4
Mechanical	280	.6	2
Metallurgical/metallurgists	10	<	0
Safety	10	<	12
Sales	10	<	19
Other, n.e.c	20	<	(nc)
Technicians	290	.6	(nc)
Computer programmers	50	.1	(nc)
Drafters	40	.1	9
Electrical/electronics engineering technicians	100	.2	7
Mechanical engineering technicians	40	.1	8
All other engineering technicians	30	<	(nc)
Physical and life science technicians	30	.1	0
Cutlery, hand tools, and hardware (SIC 3420):			
Scientific and technical personnel	6,010	4.7	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Cutlery, hand tools, and hardware (SIC 3420) — continued:			
Scientists	910	0.7	(nc)
Physical scientists	250	.2	0
Life scientists	80	.1	0
Computer analysts	580	.5	(nc)
Managers of scientific and technical personnel	640	.5	3
Engineers	2,560	2.0	(nc)
Civil	60	<	48
Computer	100	.1	26
Electrical/electronics	190	.2	19
Industrial	480	.4	3
Mechanical	970	.8	5
Metallurgical/metallurgists	110	.1	4
Safety	80	.1	4
Sales	190	.2	9
Other, n.e.c	380	.3	(nc)
Technicians	1,900	1.5	(nc)
Computer programmers	320	.2	(nc)
Drafters	780	.6	2
Electrical/electronics engineering technicians	170	.1	14
Mechanical engineering technicians	160	.1	7
All other engineering technicians	340	.3	(nc)
Physical and life science technicians	130	.1	0
Plumbing and heating, except electric (SIC 3430):			
Scientific and technical personnel	2,630	4.6	(nc)
Scientists	150	.3	(nc)
Computer analysts	150	.3	(nc)
Managers of scientific and technical personnel	300	.5	2
Engineers	1,090	1.9	(nc)
Civil	10	<	0
Computer	20	<	5
Electrical/electronics	60	.1	6
Industrial	220	.4	3
Mechanical	490	.9	3
Metallurgical/metallurgists	30	<	0
Safety	20	<	0
Sales	140	.2	2
Other, n.e.c	100	.2	(nc)
Technicians	1,090	1.9	(nc)
Computer programmers	210	.4	(nc)
Drafters	570	1.0	11
Electrical/electronics engineering technicians	60	.1	3
Mechanical engineering technicians	120	.2	2
All other engineering technicians	120	.2	(nc)
Physical and life science technicians	10	<	0

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Fabricated structural metal products (SIC 3440):			
Scientific and technical personnel	19,590	4.9	(nc)
Scientists	590	.1	(nc)
Physical scientists	10	.0	44
Life scientists	10	.0	7
Computer analysts	570	.1	(nc)
Managers of scientific and technical personnel	1,440	.4	7
Engineers	6,050	1.5	(nc)
Civil	770	.2	14
Computer	370	.1	33
Electrical/electronics	280	.1	14
Industrial	610	.2	5
Mechanical	2,410	.6	7
Metallurgical/metallurgists	170	<	8
Safety	140	<	5
Sales	760	.2	11
Other, n.e.c	540	.1	(nc)
Technicians	11,510	2.9	(nc)
Computer programmers	800	.2	(nc)
Drafters	9,160	2.3	3
Electrical/electronics engineering technicians	250	.1	21
Mechanical engineering technicians	320	.1	10
All other engineering technicians	980	.2	(nc)
Screw machine products, bolts, etc. (SIC 3450):			
Scientific and technical personnel	2,830	3.0	(nc)
Scientists	130	.1	(nc)
Computer analysts	130	.1	(nc)
Managers of scientific and technical personnel	370	.4	2
Engineers	1,510	1.6	(nc)
Civil	20	<	0
Computer	50	<	4
Electrical/electronics	60	.1	5
Industrial	230	.2	2
Mechanical	800	.9	4
Metallurgical/metallurgists	60	.1	1
Safety	20	<	0
Sales	180	.2	1
Other, n.e.c	90	.1	(nc)
Technicians	820	.8	(nc)
Computer programmers	190	.2	(nc)
Drafters	360	.4	5
Mechanical engineering technicians	150	.2	2
All other engineering technicians	110	.1	(nc)
Physical and life science technicians	10	0	0

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Metal forgings and stampings (SIC 3460):			
Scientific and technical personnel	8,060	3.6	(nc)
Scientists	290	.1	(nc)
Physical scientists	20	.0	0
Computer analysts	270	.1	(nc)
Managers of scientific and technical personnel	920	.4	6
Engineers	4,570	2.0	(nc)
Civil	130	.1	58
Computer	130	<	13
Electrical/electronics	140	.1	18
Industrial	770	.3	3
Mechanical	1,970	.9	14
Metallurgical/metallurgists	160	.1	8
Safety	160	.1	8
Sales	340	.2	16
Other, n.e.c	770	.4	(nc)
Technicians	2,280	1.0	(nc)
Computer programmers	560	.2	(nc)
Drafters	930	.4	10
Electrical/electronics engineering technicians	210	.1	16
Mechanical engineering technicians	180	.1	8
All other engineering technicians	380	.2	(nc)
Physical and life science technicians	20	<	0
Metal services, nec (SIC 3470):			
Scientific and technical personnel	2,040	1.6	(nc)
Scientists	240	.2	(nc)
Physical scientists	150	.1	18
Computer analysts	90	.1	(nc)
Managers of scientific and technical personnel	190	.2	2
Engineers	930	.7	(nc)
Civil	20	<	0
Computer	30	<	3
Electrical/electronics	60	<	10
Industrial	80	.1	12
Mechanical	270	.2	6
Metallurgical/metallurgists	120	.1	13
Safety	60	<	9
Sales	110	.1	5
Other, n.e.c	180	.2	(nc)
Technicians	680	.6	(nc)
Computer programmers	70	.1	1
Drafters	200	.2	14
Electrical/electronics engineering technicians	40	<	12
Mechanical engineering technicians	30	<	2
All other engineering technicians	180	.1	(nc)
Physical and life science technicians	160	.1	14

See explanatory information, if any, and SOURCE at end of table

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Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Ordnance and accessories, nec (SIC 3480):			
Scientific and technical personnel	11,470	17.3	(nc)
Scientists	1,130	1.7	(nc)
Physical scientists	490	.8	0
Life scientists	120	.2	0
Computer analysts	520	.8	(nc)
Managers of scientific and technical personnel	890	1.3	0
Engineers	5,610	8.5	(nc)
Civil	350	.5	0
Electrical/electronics	480	.7	0
Industrial	880	1.3	0
Mechanical	1,340	2.0	<
Metallurgical/metallurgists	180	.3	0
Safety	250	.4	0
Other, n.e.c	2,130	3.2	(nc)
Technicians	3,840	5.8	(nc)
Computer programmers	490	.7	(nc)
Drafters	440	.7	0
Electrical/electronics engineering technicians	980	1.5	0
Mechanical engineering technicians	350	.5	0
All other engineering technicians	1,000	1.5	(nc)
Physical and life science technicians	580	.9	0
Misc. fabricated metal products (SIC 3490):			
Scientific and technical personnel	10,330	4.5	(nc)
Scientists	450	.2	(nc)
Physical scientists	60	<	8
Computer analysts	390	.2	(nc)
Managers of scientific and technical personnel	1,190	.5	2
Engineers	4,680	2.0	(nc)
Civil	40	<	5
Computer	120	<	8
Electrical/electronics	240	.1	4
Industrial	610	.3	2
Mechanical	2,260	1.0	2
Metallurgical/metallurgists	210	.1	5
Safety	110	<	3
Sales	640	.3	11
Other, n.e.c	450	.2	(nc)
Technicians	4,010	1.8	(nc)
Computer programmers	540	.2	(nc)
Drafters	1,990	.9	5
Electrical/electronics engineering technicians	200	.1	8
Mechanical engineering technicians	420	.2	2
All other engineering technicians	790	.4	(nc)
Physical and life science technicians	70	<	15

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Engines and turbines (SIC 3510):			
Scientific and technical personnel	12,380	14.0	(nc)
Scientists	820	.9	(nc)
Physical scientists	10	<	0
Computer analysts	810	.9	(nc)
Managers of scientific and technical personnel	890	1.0	1
Engineers	7,450	8.5	(nc)
Chemical	20	<	0
Civil	80	.1	0
Computer	250	.3	0
Electrical/electronics	500	.6	1
Industrial	1,000	1.1	0
Mechanical	4,350	5.0	<
Metallurgical/metallurgists	230	.3	0
Sales	380	.4	1
Other, n.e.c	640	.7	(nc)
Technicians	3,220	3.6	(nc)
Computer programmers	360	.4	(nc)
Drafters	860	1.0	<
Electrical/electronics engineering technicians	410	.5	1
Mechanical engineering technicians	620	.7	0
All other engineering technicians	640	.7	(nc)
Chemical technicians, except health	90	.1	0
All other physical and life science technicians	240	.3	(nc)
Farm and garden machinery (SIC 3520):			
Scientific and technical personnel	6,540	6.9	(nc)
Scientists	860	.9	(nc)
Physical scientists	10	<	0
Computer analysts	850	.9	(nc)
Managers of scientific and technical personnel	540	.6	4
Engineers	3,300	3.5	(nc)
Agricultural	410	.4	3
Computer	280	.3	3
Electrical/electronics	200	.2	4
Industrial	520	.6	3
Mechanical	970	1.0	3
Metallurgical/metallurgists	40	<	3
Sales	260	.3	9
Other, n.e.c	620	.7	(nc)
Technicians	1,840	1.9	(nc)
Computer programmers	290	.3	(nc)
Drafters	810	.9	4
Electrical/electronics engineering technicians	150	.2	3
Mechanical engineering technicians	310	.3	3
All other engineering technicians	260	.3	(nc)
Chemical technicians, except health	10	<	0

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Farm and garden machinery (SIC 3520) — continued:			
Technicians — continued			
All other physical and life science technicians	10	0.0	(nc)
Construction and related machinery (SIC 3530):			
Scientific and technical personnel	23,970	11.4	(nc)
Scientists	2,340	1.1	(nc)
Operations and systems researchers and analysts	120	<	3
Physical scientists	70	<	6
Computer analysts	2,150	1.0	(nc)
Managers of scientific and technical personnel	2,420	1.2	9
Engineers	10,860	5.2	(nc)
Agricultural	10	.0	0
Civil	100	<	25
Computer	550	.3	4
Electrical/electronics	1,090	.5	4
Industrial	1,420	.7	5
Mechanical	4,580	2.2	2
Metallurgical/metallurgists	270	.1	5
Sales	1,330	.6	5
Other, n.e.c	1,510	.7	(nc)
Technicians	8,350	3.9	(nc)
Computer programmers	990	.5	(nc)
Drafters	4,000	1.9	4
Electrical/electronics engineering technicians	830	.4	5
Mechanical engineering technicians	900	.4	2
Civil engineering technicians	20	.0	0
All other engineering technicians	1,210	.6	(nc)
Chemical technicians, except health	280	.1	14
All other physical and life science technicians	120	<	(nc)
Metalworking machinery (SIC 3540):			
Scientific and technical personnel	26,590	8.6	(nc)
Scientists	690	.2	(nc)
Operations and systems researchers and analysts	50	<	10
Life scientists	10	.0	40
Computer analysts	630	.2	(nc)
Managers of scientific and technical personnel	2,310	.8	4
Engineers	12,680	4.1	(nc)
Chemical	30	.0	12
Civil	30	.0	8
Computer	660	.2	9
Electrical/electronics	1,710	.6	4
Industrial	1,060	.3	5
Mechanical	5,860	1.9	3
Metallurgical/metallurgists	200	.1	11
Sales	2,240	.7	4

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Metalworking machinery (SIC 3540) — continued:			
Engineers — continued			
Other, n.e.c	890	0.3	(nc)
Technicians	10,910	3.5	(nc)
Computer programmers	2,480	.8	(nc)
Drafters	5,380	1.8	8
Electrical/electronics engineering technicians	1,080	.4	5
Mechanical engineering technicians	970	.3	16
Civil engineering technicians	20	.0	13
All other engineering technicians	880	.3	(nc)
All other physical and life science technicians	100	<	(nc)
Special industry machinery (SIC 3550):			
Scientific and technical personnel	22,880	14.9	(nc)
Scientists	670	.4	(nc)
Operations and systems researchers and analysts	70	<	1
All other mathematicians	10	.0	0
Physical scientists	80	<	24
Computer analysts	510	.3	(nc)
Managers of scientific and technical personnel	2,420	1.6	4
Engineers	11,890	7.8	(nc)
Agricultural	10	.0	0
Chemical	330	.2	1
Civil	40	<	11
Computer	800	.5	2
Electrical/electronics	2,480	1.6	3
Industrial	810	.5	6
Mechanical	4,610	3.0	2
Metallurgical/metallurgists	40	<	15
Sales	1,650	1.1	3
Other, n.e.c	1,120	.7	(nc)
Technicians	7,900	5.1	(nc)
Computer programmers	830	.5	(nc)
Drafters	3,370	2.2	3
Electrical/electronics engineering technicians	1,480	1.0	4
Mechanical engineering technicians	980	.6	1
Civil engineering technicians	10	.0	4
All other engineering technicians	1,060	.7	(nc)
Chemical technicians, except health	150	.1	2
All other physical and life science technicians	20	<	(nc)
General industrial machinery (SIC 3560):			
Scientific and technical personnel	29,710	12.3	(nc)
Scientists	1,060	.4	(nc)
Operations and systems researchers and analysts	70	<	18
Physical scientists	180	.1	2
Life scientists	40	<	17
Computer analysts	770	.3	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
General industrial machinery (SIC 3560) — continued:			
Managers of scientific and technical personnel	2,900	1.2	5
Engineers	15,770	6.5	(nc)
Chemical	280	.1	16
Civil	100	<	22
Computer	520	.2	12
Electrical/electronics	2,050	.8	6
Industrial	1,650	.7	4
Mechanical	6,570	2.7	5
Metallurgical/metallurgists	250	.1	14
Sales	3,290	1.4	7
Other, n.e.c	1,060	.4	(nc)
Technicians	9,980	4.1	(nc)
Computer programmers	960	.4	(nc)
Drafters	4,710	2.0	4
Electrical/electronics engineering technicians	1,290	.5	8
Mechanical engineering technicians	1,080	.4	5
Civil engineering technicians	20	.0	0
All other engineering technicians	1,580	.6	(nc)
Chemical technicians, except health	260	.1	3
All other physical and life science technicians	80	<	(nc)
Computer and office equipment (SIC 3570):			
Scientific and technical personnel	138,710	33.1	(nc)
Scientists	11,220	2.7	(nc)
Operations and systems researchers and analysts	570	.1	0
All other mathematicians	220	<	0
Physical scientists	110	<	5
Computer analysts	10,320	2.5	(nc)
Managers of scientific and technical personnel	13,520	3.2	5
Engineers	70,840	16.9	(nc)
Chemical	300	.1	18
Civil	100	<	31
Computer	32,270	7.7	13
Electrical/electronics	20,640	4.9	6
Industrial	5,120	1.2	1
Mechanical	4,530	1.1	6
Metallurgical/metallurgists	140	<	0
Sales	2,150	.5	4
Other, n.e.c	5,590	1.3	(nc)
Technicians	43,130	10.3	(nc)
Computer programmers	14,300	3.4	(nc)
Drafters	2,660	.6	6
Electrical/electronics engineering technicians	18,940	4.5	3
Mechanical engineering technicians	1,550	.4	10
Civil engineering technicians	30	.0	0
All other engineering technicians	5,360	1.3	(nc)
Chemical technicians, except health	140	<	3

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Computer and office equipment (SIC 3570) — continued:			
Technicians — continued			
All other physical and life science technicians	150	<	(nc)
Refrigeration and service machinery (SIC 3580):			
Scientific and technical personnel	14,350	7.8	(nc)
Scientists	420	.2	(nc)
Operations and systems researchers and analysts	50	<	0
All other mathematicians	10	.0	0
Physical scientists	20	<	13
Computer analysts	340	.2	(nc)
Managers of scientific and technical personnel	1,280	.7	3
Engineers	7,070	3.9	(nc)
Chemical	110	<	19
Civil	60	<	3
Computer	190	.1	5
Electrical/electronics	970	.5	3
Industrial	970	.5	2
Mechanical	1,780	1.0	3
Metallurgical/metallurgists	30	<	10
Sales	1,130	.6	18
Other, n.e.c	1,830	1.0	(nc)
Technicians	5,580	3.1	(nc)
Computer programmers	500	.3	(nc)
Drafters	2,340	1.3	3
Electrical/electronics engineering technicians	790	.4	4
Mechanical engineering technicians	900	.5	7
Civil engineering technicians	30	<	5
All other engineering technicians	940	.5	(nc)
Chemical technicians, except health	60	<	14
All other physical and life science technicians	20	<	(nc)
Industrial machinery, nec (SIC 3590):			
Scientific and technical personnel	16,000	5.3	(nc)
Scientists	380	.1	(nc)
Operations and systems researchers and analysts	40	<	8
Computer analysts	340	.1	(nc)
Managers of scientific and technical personnel	2,070	.7	5
Engineers	7,850	2.6	(nc)
Chemical	40	<	12
Civil	50	<	1
Computer	330	.1	8
Electrical/electronics	960	.3	4
Industrial	860	.3	4
Mechanical	3,380	1.1	3
Metallurgical/metallurgists	130	<	1
Sales	1,400	.5	6

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Industrial machinery, nec (SIC 3590) — continued:			
Engineers — continued			
Other, n.e.c	700	0.2	(nc)
Technicians	5,700	1.9	(nc)
Computer programmers	1,620	.5	(nc)
Drafters	1,860	.6	4
Electrical/electronics engineering technicians	790	.3	8
Mechanical engineering technicians	530	.2	4
All other engineering technicians	830	.3	(nc)
Chemical technicians, except health	60	<	3
All other physical and life science technicians	10	.0	(nc)
Electric distribution equipment (SIC 3610):			
Scientific and technical personnel	11,990	13.6	(nc)
Scientists	480	.5	(nc)
Operations and systems researchers and analysts	30	<	0
Chemists	30	<	0
Computer analysts	420	.5	(nc)
Managers of scientific and technical personnel	920	1.0	3
Engineers	6,630	7.5	(nc)
Chemical	30	<	0
Civil	20	<	0
Computer	210	.2	6
Electrical/electronics	2,940	3.3	2
Industrial	840	1.0	2
Mechanical	1,270	1.4	1
Metallurgical/metallurgists	40	<	0
Safety	60	.1	0
Sales	460	.5	2
Other, n.e.c	760	.9	(nc)
Technicians	3,960	4.5	(nc)
Computer programmers	340	.4	(nc)
Drafters	1,650	1.9	2
Electrical/electronics engineering technicians	1,470	1.7	3
Mechanical engineering technicians	160	.2	0
All other engineering technicians	290	.3	(nc)
Chemical technicians, except health	50	.1	0
Electrical industrial apparatus (SIC 3620):			
Scientific and technical personnel	20,620	12.7	(nc)
Scientists	730	.4	(nc)
Operations and systems researchers and analysts	30	<	0
Chemists	30	<	8
All other physical scientists	40	<	(nc)
Computer analysts	630	.4	(nc)
Managers of scientific and technical personnel	1,690	1.0	4

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Electrical industrial apparatus (SIC 3620) — continued:			
Engineers	10,400	6.4	(nc)
Chemical	130	.1	6
Civil	40	<	9
Computer	620	.4	9
Electrical/electronics	5,230	3.2	2
Industrial	1,270	.8	2
Mechanical	1,510	.9	3
Metallurgical/metallurgists	60	<	0
Safety	100	.1	3
Sales	980	.6	7
Other, n.e.c	460	.3	(nc)
Technicians	7,800	4.8	(nc)
Computer programmers	670	.4	(nc)
Drafters	2,140	1.3	3
Electrical/electronics engineering technicians	3,590	2.2	3
Mechanical engineering technicians	420	.2	6
All other engineering technicians	800	.5	(nc)
Chemical technicians, except health	140	.1	6
All other physical and life science technicians	40	<	(nc)
Household appliances (SIC 3630):			
Scientific and technical personnel	5,800	4.8	(nc)
Scientists	660	.5	(nc)
All other mathematicians	10	.0	0
All other physical scientists	30	<	(nc)
Computer analysts	620	.5	(nc)
Managers of scientific and technical personnel	490	.4	2
Engineers	3,010	2.5	(nc)
Chemical	30	<	0
Computer	60	<	0
Electrical/electronics	540	.4	3
Industrial	820	.7	1
Mechanical	910	.8	<
Metallurgical/metallurgists	20	<	0
Safety	50	<	0
Sales	10	.0	0
Other, n.e.c	570	.5	(nc)
Technicians	1,640	1.3	(nc)
Computer programmers	120	.1	0
Drafters	500	.4	2
Electrical/electronics engineering technicians	260	.2	0
Mechanical engineering technicians	210	.2	0
All other engineering technicians	460	.4	(nc)
Chemical technicians, except health	80	.1	0
All other physical and life science technicians	10	.0	(nc)
Electric lighting and wiring equipment (SIC 3640):			
Scientific and technical personnel	11,980	6.6	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Electric lighting and wiring equipment (SIC 3640) — continued:			
Scientists	770	0.4	(nc)
Operations and systems researchers and analysts	50	<	3
Chemists	30	<	10
Physicists and astronomers	80	<	2
All other physical scientists	20	<	(nc)
Computer analysts	590	.3	(nc)
Managers of scientific and technical personnel	1,420	.8	10
Engineers	6,060	3.3	(nc)
Chemical	170	.1	9
Civil	20	.0	20
Computer	280	.2	29
Electrical/electronics	1,500	.8	8
Industrial	1,060	.6	2
Mechanical	1,270	.7	3
Metallurgical/metallurgists	160	.1	14
Safety	90	<	4
Sales	580	.3	8
Other, n.e.c	930	.5	(nc)
Technicians	3,730	2.0	(nc)
Computer programmers	440	.2	(nc)
Drafters	1,230	.7	6
Electrical/electronics engineering technicians	810	.4	9
Mechanical engineering technicians	340	.2	11
Civil engineering technicians	10	.0	0
All other engineering technicians	810	.4	(nc)
Chemical technicians, except health	60	<	29
All other physical and life science technicians	30	<	(nc)
Household audio and video equipment (SIC 3650):			
Scientific and technical personnel	10,380	12.5	(nc)
Scientists	480	.6	(nc)
Operations and systems researchers and analysts	50	.1	0
All other mathematicians	70	.1	0
Chemists	10	.0	0
All other physical scientists	10	<	(nc)
Computer analysts	340	.4	(nc)
Managers of scientific and technical personnel	700	.8	7
Engineers	5,940	7.2	(nc)
Chemical	20	<	11
Computer	140	.2	5
Electrical/electronics	1,100	1.3	3
Industrial	530	.6	<
Mechanical	420	.5	1
Safety	40	<	0
Sales	130	.2	3
Other, n.e.c	3,560	4.3	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Household audio and video equipment (SIC 3650) — continued:			
Technicians	3,260	3.9	(nc)
Computer programmers	230	.3	4
Drafters	680	.8	4
Electrical/electronics engineering technicians	1,200	1.4	4
Mechanical engineering technicians	70	.1	0
All other engineering technicians	1,060	1.3	(nc)
Chemical technicians, except health	10	<	0
All other physical and life science technicians	10	<	(nc)
Communication equipment (SIC 3660):			
Scientific and technical personnel	66,840	26.6	(nc)
Scientists	3,590	1.4	(nc)
Operations and systems researchers and analysts	110	<	5
Chemists	80	<	25
Physicists and astronomers	30	<	0
All other physical scientists	10	.0	(nc)
Computer analysts	3,360	1.3	(nc)
Managers of scientific and technical personnel	5,160	2.1	5
Engineers	35,720	14.2	(nc)
Chemical	80	<	7
Civil	60	<	28
Computer	5,920	2.4	2
Electrical/electronics	18,370	7.3	2
Industrial	2,160	.9	2
Mechanical	3,440	1.4	6
Metallurgical/metallurgists	50	<	5
Safety	210	.1	5
Sales	1,240	.5	6
Other, n.e.c	4,190	1.7	(nc)
Technicians	22,370	8.9	(nc)
Computer programmers	2,040	.8	(nc)
Drafters	2,970	1.2	2
Electrical/electronics engineering technicians	12,020	4.8	1
Mechanical engineering technicians	840	.3	2
Civil engineering technicians	370	.1	4
All other engineering technicians	3,990	1.6	(nc)
Chemical technicians, except health	120	<	9
All other physical and life science technicians	20	.0	(nc)
Electronic components and accessories (SIC 3670):			
Scientific and technical personnel	122,680	22.8	(nc)
Scientists	7,410	1.3	(nc)
Operations and systems researchers and analysts	430	.1	2
All other mathematicians	90	<	0
Chemists	850	.2	13
Physicists and astronomers	750	.1	2
All other physical scientists	150	<	(nc)
Life scientists	30	.0	20

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Electronic components and accessories (SIC 3670) — continued:			
Scientists — continued			
Computer analysts	5,110	0.9	(nc)
Managers of scientific and technical personnel	9,490	1.8	4
Engineers	58,540	10.9	(nc)
Chemical	1,390	.2	21
Computer	11,460	2.1	1
Electrical/electronics	23,050	4.3	4
Industrial	6,660	1.2	2
Mechanical	5,030	.9	3
Metallurgical/metallurgists	800	.2	7
Safety	550	.1	9
Sales	4,180	.8	13
Other, n.e.c	5,420	1.0	(nc)
Technicians	47,240	8.8	(nc)
Computer programmers	3,140	.6	(nc)
Drafters	4,240	.8	5
Electrical/electronics engineering technicians	28,500	5.3	3
Mechanical engineering technicians	2,160	.4	2
All other engineering technicians	7,200	1.3	(nc)
Chemical technicians, except health	1,480	.3	4
All other physical and life science technicians	520	.1	(nc)
Misc. electrical equipment & supplies (SIC 3690):			
Scientific and technical personnel	18,460	11.9	(nc)
Scientists	980	.6	(nc)
Operations and systems researchers and analysts	20	<	0
All other mathematicians	60	<	0
Chemists	120	.1	0
Physicists and astronomers	20	<	15
All other physical scientists	50	<	(nc)
Computer analysts	710	.4	(nc)
Managers of scientific and technical personnel	1,480	1.0	2
Engineers	10,250	6.6	(nc)
Chemical	230	.2	0
Civil	20	<	4
Computer	960	.6	3
Electrical/electronics	2,820	1.8	2
Industrial	1,450	.9	1
Mechanical	1,750	1.1	4
Metallurgical/metallurgists	80	<	7
Safety	100	.1	1
Sales	280	.2	5
Other, n.e.c	2,560	1.7	(nc)
Technicians	5,750	3.7	(nc)
Computer programmers	580	.4	(nc)
Drafters	1,060	.7	2

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Misc. electrical equipment & supplies (SIC 3690) — continued:			
Technicians — continued			
Electrical/electronics engineering technicians	1,990	1.3	4
Mechanical engineering technicians	570	.4	1
Civil engineering technicians	40	<	0
All other engineering technicians	1,220	.8	(nc)
Chemical technicians, except health	220	.1	5
All other physical and life science technicians	70	<	(nc)
Motor vehicles and equipment (SIC 3710):			
Scientific and technical personnel	79,610	9.3	(nc)
Scientists	6,200	.7	(nc)
Operations and systems researchers and analysts	310	<	<
Statisticians	1,650	.2	2
All other mathematicians	10	.0	(nc)
Physical scientists	770	.1	3
Life scientists	10	.0	0
Computer analysts	3,450	.4	(nc)
Managers of scientific and technical personnel	3,400	.4	3
Engineers	46,350	5.4	(nc)
Aeronautical	40	.0	88
Chemical	130	<	<
Civil	110	<	0
Computer	700	.1	12
Electrical/electronics	1,270	.1	13
Industrial	7,220	.8	1
Mechanical	7,970	.9	2
Metallurgical/metallurgists	290	<	0
Safety	470	<	2
Sales	670	.1	1
Other, n.e.c	27,480	3.2	(nc)
Technicians	23,660	2.8	(nc)
Computer programmers	1,570	.2	(nc)
Drafters	5,860	.7	2
Electrical/electronics engineering technicians	950	.1	18
Mechanical engineering technicians	1,890	.2	2
Civil engineering technicians	1,240	.1	<
All other engineering technicians	11,690	1.4	(nc)
Physical and life science technicians	460	<	0
Aircraft and parts (SIC 3720):			
Scientific and technical personnel	170,710	27.4	(nc)
Scientists	20,280	3.2	(nc)
Operations and systems researchers and analysts	1,080	.2	<
Statisticians	350	<	1
All other mathematicians	80	<	(nc)
Physical scientists	1,010	.2	0
Life scientists	10	.0	0
Computer analysts	17,750	2.8	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Aircraft and parts (SIC 3720) — continued:			
Managers of scientific and technical personnel	10,340	1.7	2
Engineers	107,820	17.3	(nc)
Aeronautical	32,790	5.3	1
Chemical	550	.1	<
Civil	1,600	.2	0
Electrical/electronics	11,470	1.8	1
Industrial	13,460	2.2	<
Marine	20	.0	0
Mechanical	13,010	2.1	1
Metallurgical/metallurgists	1,380	.2	3
Safety	920	.1	3
Sales	1,120	.2	2
Other, n.e.c	31,500	5.1	(nc)
Technicians	32,270	5.2	(nc)
Computer programmers	4,760	.8	(nc)
Drafters	5,600	.9	2
Electrical/electronics engineering technicians	6,780	1.1	1
Mechanical engineering technicians	3,860	.6	1
Civil engineering technicians	200	<	0
All other engineering technicians	10,230	1.6	(nc)
Physical and life science technicians	840	.1	2
Ship and boat building and repairing (SIC 3730):			
Scientific and technical personnel	9,740	5.6	(nc)
Scientists	340	.2	(nc)
All other mathematicians	20	<	(nc)
Physical scientists	30	<	0
Computer analysts	290	.2	(nc)
Managers of scientific and technical personnel	540	.3	1
Engineers	3,480	2.0	(nc)
Chemical	70	<	0
Civil	60	<	3
Computer	40	<	4
Electrical/electronics	200	.1	2
Industrial	410	.2	4
Marine	290	.2	3
Mechanical	1,100	.6	2
Metallurgical/metallurgists	20	<	0
Safety	180	.1	2
Sales	30	<	14
Other, n.e.c	1,080	.6	(nc)
Technicians	5,380	3.1	(nc)
Computer programmers	370	.2	(nc)
Drafters	3,140	1.8	2
Mechanical engineering technicians	210	.1	3
Civil engineering technicians	60	<	0
All other engineering technicians	1,400	.8	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Ship and boat building and repairing (SIC 3730) — continued:			
Technicians — continued			
Physical and life science technicians	200	0.1	0
Railroad equipment (SIC 3740):			
Scientific and technical personnel	1,800	6.2	(nc)
Scientists	130	.4	(nc)
All other mathematicians	30	.1	(nc)
Physical scientists	10	<	0
Computer analysts	90	.3	(nc)
Managers of scientific and technical personnel	120	.4	0
Engineers	1,010	3.5	(nc)
Chemical	20	.1	0
Computer	30	.1	0
Electrical/electronics	120	.4	1
Industrial	150	.5	0
Mechanical	210	.7	<
Metallurgical/metallurgists	20	<	0
Safety	20	<	0
Other, n.e.c	440	1.6	(nc)
Technicians	540	1.8	(nc)
Computer programmers	50	.2	(nc)
Drafters	330	1.2	1
Electrical/electronics engineering technicians	40	.1	0
Mechanical engineering technicians	40	.1	0
All other engineering technicians	80	.3	(nc)
Motorcycles, bicycles, and parts (SIC 3750):			
Scientific and technical personnel	550	3.4	(nc)
Scientists	70	.4	(nc)
Computer analysts	70	.4	(nc)
Managers of scientific and technical personnel	80	.5	0
Engineers	230	1.4	(nc)
Computer	10	.1	0
Electrical/electronics	20	.1	0
Industrial	30	.2	0
Mechanical	110	.7	1
Other, n.e.c	60	.4	(nc)
Technicians	170	1.1	(nc)
Computer programmers	20	.1	19
Drafters	50	.3	11
Mechanical engineering technicians	60	.4	0
All other engineering technicians	40	.2	(nc)
Guided missiles, space vehicles, parts (SIC 3760):			
Scientific and technical personnel	63,700	41.7	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Guided missiles, space vehicles, parts (SIC 3760) — continued:			
Scientists	6,530	4.3	(nc)
Operations and systems researchers and analysts	1,010	.7	0
Statisticians	560	.4	0
All other mathematicians	10	.0	(nc)
Physical scientists	1,020	.7	10
Life scientists	30	<	0
Computer analysts	3,900	2.6	(nc)
Managers of scientific and technical personnel	4,360	2.9	<
Engineers	41,820	27.4	(nc)
Aeronautical	3,290	2.2	<
Chemical	520	.3	0
Civil	560	.4	0
Computer	1,610	1.0	1
Electrical/electronics	7,690	5.0	<
Industrial	2,510	1.6	0
Marine	100	.1	0
Mechanical	5,080	3.3	1
Metallurgical/metallurgists	410	.3	0
Safety	720	.5	<
Sales	70	<	11
Other, n.e.c	19,260	12.7	(nc)
Technicians	10,990	7.2	(nc)
Computer programmers	2,930	1.9	(nc)
Drafters	660	.4	4
Electrical/electronics engineering technicians	2,560	1.7	<
Mechanical engineering technicians	1,920	1.3	<
All other engineering technicians	2,520	1.6	(nc)
Physical and life science technicians	400	.3	0
Miscellaneous transportation equipment (SIC 3790):			
Scientific and technical personnel	1,940	4.1	(nc)
Scientists	60	.1	(nc)
Computer analysts	60	.1	(nc)
Managers of scientific and technical personnel	180	.4	5
Engineers	960	2.0	(nc)
Civil	40	.1	0
Electrical/electronics	40	.1	0
Industrial	240	.5	0
Mechanical	480	1.0	3
Metallurgical/metallurgists	20	<	0
Safety	20	<	0
Sales	20	<	37
Other, n.e.c	100	.2	(nc)
Technicians	740	1.6	(nc)
Computer programmers	100	.2	(nc)
Drafters	320	.7	3

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Miscellaneous transportation equipment (SIC 3790) — continued:			
Technicians — continued			
Electrical/electronics engineering technicians	50	0.1	0
Mechanical engineering technicians	130	3	0
All other engineering technicians	140	3	(nc)
Search and navigation equipment (SIC 3810):			
Scientific and technical personnel	98,200	39.9	(nc)
Scientists	7,990	3.2	(nc)
Operations and systems researchers and analysts	320	1	0
Chemists	40	<	2
All other physical scientists	1,840	8	(nc)
Computer analysts	5,790	2.4	(nc)
Managers of scientific and technical personnel	9,120	3.7	1
Engineers	57,420	23.4	(nc)
Chemical	210	1	0
Computer	7,340	3.0	2
Electrical/electronics	29,010	11.8	<
Industrial	7,570	3.1	<
Mechanical	4,920	2.0	5
Sales	380	2	5
Other, n.e.c.	7,990	3.2	(nc)
Technicians	23,670	9.6	(nc)
Computer programmers	2,210	9	1
Drafters	2,460	1.0	2
Electrical/electronics engineering technicians	12,520	5.1	2
Mechanical engineering technicians	2,000	8	3
All other engineering technicians	3,450	1.4	(nc)
Chemical technicians, except health	170	1	0
All other physical and life science technicians	860	3	(nc)
Measuring and controlling devices (SIC 3820):			
Scientific and technical personnel	66,410	21.4	(nc)
Scientists	3,730	1.2	(nc)
Operations and systems researchers and analysts	120	<	6
Chemists	560	2	7
All other physical scientists	250	1	(nc)
Life scientists	450	1	4
Computer analysts	2,350	8	(nc)
Managers of scientific and technical personnel	4,830	1.6	4
Engineers	34,990	11.3	(nc)
Chemical	320	1	10
Computer	3,720	1.2	7
Electrical/electronics	16,420	5.3	4
Industrial	2,920	9	2
Mechanical	5,380	1.7	4
Sales	2,450	8	8

See explanatory information, if any, and SOURCE at end of table.

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Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Measuring and controlling devices (SIC 3820) — continued:			
Engineers — continued			
Other, n.e.c	3,780	1.2	(nc)
Technicians	22,860	7.4	(nc)
Computer programmers	2,540	.8	(nc)
Drafters	3,830	1.2	6
Electrical/electronics engineering technicians	10,950	3.5	3
Mechanical engineering technicians	1,960	.6	10
All other engineering technicians	3,060	1.0	(nc)
Chemical technicians, except health	410	.1	11
All other physical and life science technicians	110	<	(nc)
Medical instruments and supplies (SIC 3840):			
Scientific and technical personnel	36,770	12.8	(nc)
Scientists	4,280	1.5	(nc)
Operations and systems researchers and analysts	160	<	0
Chemists	800	.3	2
All other physical scientists	170	<	(nc)
Life scientists	1,620	.6	9
Computer analysts	1,530	.5	(nc)
Managers of scientific and technical personnel	3,540	1.2	2
Engineers	15,380	5.4	(nc)
Chemical	510	.2	1
Computer	1,840	.6	3
Electrical/electronics	3,900	1.4	6
Industrial	2,250	.8	2
Mechanical	4,130	1.4	4
Sales	290	.1	11
Other, n.e.c	2,460	.9	(nc)
Technicians	13,570	4.7	(nc)
Computer programmers	1,250	.4	(nc)
Drafters	1,840	.6	6
Electrical/electronics engineering technicians	3,630	1.3	3
Mechanical engineering technicians	2,040	.7	2
All other engineering technicians	2,270	.8	(nc)
Chemical technicians, except health	1,640	.6	3
All other physical and life science technicians	900	.3	(nc)
Ophthalmic goods (SIC 3850):			
Scientific and technical personnel	2,620	6.5	(nc)
Scientists	530	1.3	(nc)
Chemists	190	.5	<
All other physical scientists	70	.2	(nc)
Life scientists	50	.1	0
Computer analysts	220	.5	(nc)
Managers of scientific and technical personnel	260	.6	0

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Ophthalmic goods (SIC 3850) — continued:			
Engineers	820	2.0	(nc)
Chemical	60	.2	6
Computer	40	.1	5
Electrical/electronics	70	.2	0
Industrial	100	.2	4
Mechanical	250	.6	6
Sales	20	<	8
Other, n.e.c	280	.7	(nc)
Technicians	1,010	2.5	(nc)
Computer programmers	110	.3	2
Drafters	80	.2	5
Electrical/electronics engineering technicians	100	.2	0
Mechanical engineering technicians	200	.5	0
All other engineering technicians	250	.6	(nc)
Chemical technicians, except health	170	.4	0
All other physical and life science technicians	100	.2	(nc)
Photographic equipment and supplies (SIC 3860):			
Scientific and technical personnel	19,120	19.8	(nc)
Scientists	1,790	1.8	(nc)
Chemists	580	.6	2
All other physical scientists	140	.1	(nc)
Life scientists	20	<	0
Computer analysts	1,050	1.1	(nc)
Managers of scientific and technical personnel	1,520	1.6	2
Engineers	7,180	7.4	(nc)
Chemical	1,060	1.1	<
Computer	630	.6	15
Electrical/electronics	2,130	2.2	3
Industrial	200	.2	3
Mechanical	1,680	1.8	2
Sales	140	.1	0
Other, n.e.c	1,340	1.4	(nc)
Technicians	8,630	8.9	(nc)
Computer programmers	710	.7	(nc)
Drafters	360	.4	4
Electrical/electronics engineering technicians	2,230	2.3	2
Mechanical engineering technicians	1,690	1.8	2
All other engineering technicians	2,530	2.6	(nc)
Chemical technicians, except health	890	.9	1
All other physical and life science technicians	220	.2	(nc)
Watches, clocks, watchcases & parts (SIC 3870):			
Scientific and technical personnel	290	3.2	(nc)
Scientists	20	.2	(nc)
Computer analysts	20	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Watches, clocks, watchcases & parts (SIC 3870) — continued:			
Managers of scientific and technical personnel	40	0.4	0
Engineers	110	1.2	(nc)
Computer	10	.1	0
Electrical/electronics	10	.1	0
Industrial	30	.3	0
Mechanical	40	.5	2
Other, n.e.c	20	.2	(nc)
Technicians	120	1.3	(nc)
Computer programmers	20	.2	5
Drafters	30	.3	7
Electrical/electronics engineering technicians	20	.2	0
Mechanical engineering technicians	10	.1	0
All other engineering technicians	40	.4	(nc)
Jewelry, silverware, and plated ware (SIC 3910):			
Scientific and technical personnel	740	1.5	(nc)
Scientists	200	.4	(nc)
Computer analysts	200	.4	(nc)
Managers of scientific and technical personnel	100	.2	0
Engineers	180	.3	(nc)
Industrial	80	.2	0
Mechanical	70	.1	19
Sales	10	<	0
Other, n.e.c	20	<	(nc)
Technicians	260	.5	(nc)
Computer programmers	120	.2	0
Drafters	60	.1	0
Mechanical engineering technicians	30	<	0
All other engineering technicians	50	.1	(nc)
Musical instruments (SIC 3930):			
Scientific and technical personnel	320	2.4	(nc)
Scientists	20	.1	0
Computer analysts	20	.1	0
Managers of scientific and technical personnel	40	.3	7
Engineers	90	.6	(nc)
Industrial	30	.2	0
Mechanical	30	.2	0
Other, n.e.c	30	.2	(nc)
Technicians	170	1.3	(nc)
Computer programmers	20	.1	8
Drafters	100	.8	13
All other engineering technicians	50	.3	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Toys and sporting goods (SIC 3940):			
Scientific and technical personnel	3,350	3.0	(nc)
Scientists	520	.4	(nc)
Physical scientists	40	<	7
Life scientists	10	0	0
Computer analysts	470	.4	(nc)
Managers of scientific and technical personnel	460	.4	3
Engineers	1,050	1.0	(nc)
Industrial	390	.4	3
Mechanical	370	.3	5
Sales	10	<	19
Other, n.e.c	280	.2	(nc)
Technicians	1,320	1.2	(nc)
Computer programmers	300	.3	22
Drafters	400	.4	3
Mechanical engineering technicians	150	.1	11
All other engineering technicians	400	.4	(nc)
Physical and life science technicians	70	.1	0
Pens, pencils, office, & art supplies (SIC 3950):			
Scientific and technical personnel	1,350	4.0	(nc)
Scientists	220	.6	(nc)
Physical scientists	90	.3	2
Computer analysts	130	.4	(nc)
Managers of scientific and technical personnel	160	.5	1
Engineers	520	1.5	(nc)
Industrial	140	.4	1
Mechanical	170	.5	<
Sales	130	.4	0
Other, n.e.c	80	.2	(nc)
Technicians	450	1.3	(nc)
Computer programmers	80	.2	2
Drafters	130	.4	16
All other engineering technicians	170	.5	(nc)
Physical and life science technicians	70	.2	2
Costume jewelry and notions (SIC 3960):			
Scientific and technical personnel	820	2.6	(nc)
Scientists	150	.5	(nc)
Physical scientists	10	<	47
Computer analysts	140	.4	(nc)
Managers of scientific and technical personnel	100	.3	2
Engineers	320	1.0	(nc)
Mechanical	140	.4	11

See explanatory information, if any, and SOURCE at end of table

Table A-5. Scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Costume jewelry and notions (SIC 3960) — continued:			
Engineers — continued			
Other, n.e.c	180	0.6	(nc)
Technicians	250	.8	(nc)
Computer programmers	80	.2	1
Drafters	60	.2	17
Mechanical engineering technicians	20	<	0
All other engineering technicians	80	.3	(nc)
Physical and life science technicians	10	<	0
Miscellaneous manufactures (SIC 3990):			
Scientific and technical personnel	3,630	2.6	(nc)
Scientists	300	.2	(nc)
Physical scientists	70	<	0
Computer analysts	230	.2	(nc)
Managers of scientific and technical personnel	310	.2	2
Engineers	960	.7	(nc)
Industrial	210	.2	1
Mechanical	330	.2	3
Sales	110	.1	4
Other, n.e.c	310	.2	(nc)
Technicians	2,060	1.5	(nc)
Computer programmers	170	.1	3
Drafters	1,220	.9	4
Mechanical engineering technicians	100	.1	8
All other engineering technicians	500	.4	(nc)
Physical and life science technicians	70	<	0

NOTE: Because of rounding, components may not add to totals

KEY: nc = not computed
< = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero
n.e.c. = not elsewhere classified

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-6. R&D scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 1 of 5

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Total manufacturing	190.2	100.0	20.6	100.0	38.5	100.0	81.3	100.0	49.8	100.0
Food and kindred products	3.4	1.8	.4	2.0	1.1	2.9	.4	.4	1.5	3.0
Meat products	.3	.1	.1	.4	<	.1	<	<	.1	.3
Dairy products	.2	.1	<	<	<	.1	<	<	.1	.2
Preserved fruits & vegetables	.4	.2	.1	.3	.1	.2	<	<	.2	.3
Grain mill products	1.5	.8	.1	.4	.6	1.5	.2	.2	.7	1.3
Bakery products	.1	<	<	.1	<	.1	.0	.0	<	<
Sugar and confectionery products	.2	.1	<	.2	.1	.2	<	<	.1	.2
Fats and oils	.2	.1	.0	.0	.1	.2	<	<	.1	.2
Beverages	.3	.1	<	.2	.1	.3	<	<	.1	.2
Misc. food and kindred products	.2	.1	<	.1	.1	.2	<	<	.1	.2
Tobacco products	.2	.1	.0	.0	.1	.4	.0	.0	.1	.1
Cigarettes	.2	.1	.0	.0	.1	.3	.0	.0	<	.1
Chewing and smoking tobacco	<	<	.0	.0	<	<	.0	.0	<	<
Textile mill products	.6	.3	.1	.5	.1	.4	.1	.1	.3	.5
Broadwoven fabric mills, cotton	<	<	.0	.0	.0	.0	<	<	<	<
Broadwoven fabric mills, manmade	<	<	.0	.0	.0	.0	.0	.0	<	<
Broadwoven fabric mills, wool	<	<	.0	.0	<	<	.0	.0	<	<
Narrow fabric mills	<	<	<	<	.0	.0	<	<	<	<
Knitting mills	.1	.1	<	.1	<	<	<	<	.1	.1
Textile finishing, except wool	.1	<	<	<	<	.1	.0	.0	<	<
Carpets and rugs	.1	<	<	.1	<	.1	<	<	<	<
Yarn and thread mills	<	<	<	<	.0	.0	<	<	<	<
Miscellaneous textile goods	.2	.1	<	.2	<	.1	<	<	.1	.2
Apparel and other textile products	.6	.3	.1	.5	.1	.2	.2	.3	.2	.4
Men's & boys' furnishings	<	<	<	.1	<	<	<	<	.0	.0
Women's and misses' outerwear	.1	<	<	.1	<	.1	<	<	.0	.0
Women's and children's undergarments	<	<	.0	.0	<	<	<	<	.0	.0
Misc. fabricated textile products	.4	.2	<	.2	<	.1	.2	.2	.2	.4
Lumber and wood products	.4	.2	.1	.4	.1	.2	<	.1	.1	.3
Logging	<	<	.0	.0	<	.1	.0	.0	.0	.0
Sawmills and planing mills	<	<	.0	.0	<	.1	.0	.0	.0	.0
Millwork, plywood & structural members	.2	.1	.1	.3	.0	.0	<	<	.1	.2
Miscellaneous wood products	.1	<	<	<	<	.1	<	<	<	<

See explanatory information, if any, and SOURCE at end of table.

Table A-6. R&D scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 2 of 5

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Furniture and fixtures	0.6	0.3	0.1	0.5	0.0	0.0	0.2	0.2	0.3	0.6
Household furniture	.1	.1	<	.1	.0	.0	<	<	<	.1
Office furniture	.1	<	<	.1	.0	.0	<	<	<	.1
Public building & related furniture	.1	<	<	<	.0	.0	<	<	<	.1
Partitions and fixtures	.1	<	<	.1	.0	.0	<	<	<	.1
Miscellaneous furniture and fixtures	.2	.1	<	.1	.0	.0	.1	.1	.1	.2
Paper and allied products	1.4	.7	.2	.8	.3	.8	.4	.4	.6	1.2
Pulp mills	.1	<	.0	.0	<	.1	<	<	<	.1
Paper mills	.4	.2	<	.2	.1	.3	.1	.1	.1	.2
Paperboard mills	.1	.1	.0	.0	<	.1	<	<	.1	.1
Paperboard containers and boxes	.3	.1	<	.1	<	.1	.1	.1	.1	.2
Misc. converted paper products	.5	.3	.1	.4	.1	.3	.1	.1	.2	.5
Printing and publishing	.6	.3	.1	.5	.2	.4	.1	.2	.2	.4
Newspapers	.1	<	<	.1	<	.1	.0	.0	.0	.0
Periodicals	.1	<	<	<	<	.1	.0	.0	<	.1
Books	.1	<	<	.1	.0	.0	<	<	<	<
Miscellaneous publishing	<	<	.0	.0	<	<	.0	.0	<	<
Commercial printing	.1	.1	<	.1	<	.1	<	<	<	.1
Manifold business forms	.2	.1	.0	.0	<	.1	.1	.1	<	.1
Greeting cards	<	<	.0	.0	.0	.0	.0	.0	<	<
Blankbooks and bookbinding	.1	<	<	.1	<	<	<	<	<	<
Printing trade services	<	<	<	<	<	<	.0	.0	<	<
Chemicals and allied products	49.1	25.8	3.5	17.1	26.7	69.2	5.2	6.4	13.7	27.6
Industrial inorganic chemicals	4.3	2.2	.5	2.4	1.4	3.6	1.3	1.6	1.1	2.1
Plastics materials and synthetics	4.9	2.6	.4	1.9	1.0	2.7	1.4	1.7	2.1	4.3
Drugs	23.8	12.5	1.5	7.4	17.2	44.7	.6	.7	4.4	8.9
Soap, cleaners, and toilet goods	2.4	1.3	.4	1.7	1.3	3.5	.2	.3	.5	.9
Paints and allied products	2.0	1.0	.1	.6	1.0	2.6	<	<	.8	1.7
Industrial organic chemicals	8.8	4.6	.4	1.8	3.4	8.7	1.2	1.5	3.8	7.7
Agricultural chemicals	.8	.4	<	.1	.5	1.3	.1	.1	.2	.4
Miscellaneous chemical products	2.1	1.1	.2	1.1	.9	2.2	.3	.3	.8	1.5
Petroleum and coal products	4.9	2.6	.1	.5	1.1	3.0	1.6	2.0	2.0	4.1
Petroleum refining	4.5	2.4	.1	.3	1.0	2.6	1.6	2.0	1.9	3.8
Asphalt paving and roofing materials	.1	<	.0	.0	<	.1	.0	.0	<	.1
Misc. petroleum and coal products	.3	.1	<	.2	.1	.3	.0	.0	.1	.2

See explanatory information, if any, and SOURCE at end of table.

Table A-6. R&D scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

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Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Rubber and misc. plastics products	4.2	2.2	0.7	3.3	0.4	1.1	1.6	2.0	1.4	2.9
Tires and inner tubes	.2	.1	<	.2	<	.1	.1	.1	<	.1
Hose & belting & gaskets & packing	.3	.2	.1	.3	<	.1	.1	.1	.1	.2
Fabricated rubber products, nec	.7	.4	.1	.4	.1	.2	.3	.3	.3	.6
Miscellaneous plastics products, nec	3.0	1.6	.5	2.4	.3	.8	1.2	1.4	1.0	2.0
Leather and leather products	.1	<	.0	.0	<	.1	<	<	<	.1
Leather tanning and finishing	<	<	.0	.0	.0	.0	.0	.0	<	.1
Footwear, except rubber	<	<	.0	.0	<	.1	<	<	.0	.0
Luggage	<	<	.0	.0	.0	.0	<	<	.0	.0
Stone,clay and glass products	1.9	1.0	.2	.7	.5	1.2	.6	.7	.7	1.4
Glass and glassware, pressed or blown	.8	.4	<	.1	.3	.7	.2	.3	.2	.5
Products of purchased glass	.4	.2	<	.1	.2	.4	.1	.1	.1	.3
Structural clay products	.1	.1	<	.1	<	<	<	.1	<	.1
Pottery and related products	.2	.1	.0	.0	<	.1	<	.1	.1	.2
Concrete, gypsum, and plaster products	<	<	<	.1	.0	.0	<	<	.0	.0
Misc. nonmetallic mineral products	.5	.2	<	.2	<	.1	.2	.2	.2	.4
Primary metal industries	3.0	1.6	.2	1.0	.2	.6	1.3	1.6	1.3	2.6
Blast furnace and basic steel products	1.0	.5	.1	.3	.1	.2	.4	.5	.4	.9
Iron and steel foundries	<	<	<	<	.0	.0	<	<	<	<
Primary nonferrous metals	.2	.1	<	.1	<	<	<	.1	.1	.2
Secondary nonferrous metals	<	<	.0	.0	<	<	<	<	.0	.0
Nonferrous rolling and drawing	1.6	.8	.1	.3	.1	.3	.8	.9	.7	1.3
Nonferrous foundries (castings)	.1	<	<	.1	.0	.0	<	<	.0	.0
Miscellaneous primary metal products	.2	.1	<	.1	<	.1	.1	.1	.1	.2
Fabricated metal products	4.2	2.2	.7	3.3	.5	1.2	1.6	2.0	1.5	2.9
Metal cans and shipping containers	<	<	.0	.0	.0	.0	<	<	<	.1
Cutlery, hand tools, and hardware	1.4	.8	.2	.8	.3	.8	.4	.5	.6	1.1
Plumbing and heating, except electric	.3	.1	.1	.3	.0	.0	.1	.1	.1	.2
Fabricated structural metal products	.5	.3	.1	.5	.0	.0	.2	.2	.2	.5

See explanatory information, if any, and SOURCE at end of table

Table A-6. R&D scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 4 of 5

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Fabricated metal products—continued										
Screw machine products, bolts, etc.	0.2	0.1	<	0.2	0.0	0.0	0.1	0.1	0.1	0.1
Metal forgings and stampings	.4	.2	.1	.4	<	<	.2	.2	.1	.3
Metal services, nec	.2	.1	<	.1	<	.1	.1	.1	<	.1
Ordnance and accessories, nec	.4	.2	<	.2	.1	.2	.2	.3	.1	.1
Misc. fabricated metal products	.8	.4	.2	.9	<	.1	.4	.4	.2	.5
Industrial machinery and equipment	37.6	19.8	5.8	28.3	2.0	5.1	20.1	24.8	9.7	19.5
Engines and turbines	.6	.3	.1	.3	.0	.0	.3	.4	.2	.4
Farm and garden machinery	.7	.4	.1	.5	<	<	.4	.5	.2	.4
Construction and related machinery	2.4	1.2	.5	2.4	.1	.2	1.1	1.4	.6	1.3
Metalworking machinery	1.1	.6	.2	.7	<	.1	.5	.7	.4	.8
Special indstry machinery	2.7	1.4	.6	2.7	.1	.2	1.5	1.9	.6	1.1
General industrial machinery	1.4	.8	.4	1.7	<	.1	.7	.9	.3	.6
Computer and office equipment	26.6	14.0	3.7	18.2	1.7	4.4	14.5	17.9	6.6	13.2
Refrigeration and service machinery	1.0	.6	.2	.8	<	.1	.5	.6	.4	.8
Industrial machinery, nec	1.1	.6	.2	1.0	.0	.0	.5	.7	.4	.7
Electronic & other electric equipment	18.2	9.6	2.5	12.0	.5	1.4	11.1	13.6	4.1	8.2
Electric distribution equipment	.7	.3	.1	.7	<	.1	.3	.4	.2	.4
Electrical industrial apparatus	1.2	.6	.2	.9	<	.1	.7	.8	.3	.6
Household appliances	.5	.3	.1	.4	<	<	.2	.3	.2	.4
Electric lighting and wiring equipment	.8	.4	.2	.7	<	.1	.4	.5	.2	.5
Household audio and video equipment	.7	.4	.2	.7	.0	.0	.5	.6	.1	.2
Communication equipment	6.9	3.6	.7	3.3	.2	.4	4.6	5.6	1.5	2.9
Electronic components and accessories	6.2	3.3	.9	4.2	.3	.7	3.8	4.6	1.3	2.6
Misc. electrical equipment & supplies	1.2	.6	.2	1.1	<	.1	.6	.8	.3	.6
Transportation equipment	25.2	13.2	1.8	8.6	1.6	4.2	16.9	20.8	4.9	9.8
Motor vehicles and equipment	11.2	5.9	.6	2.8	.5	1.2	7.3	8.9	2.8	5.7
Aircraft and parts	4.9	2.6	.6	2.8	.1	.3	3.5	4.3	.7	1.5
Ship and boat building and repairing	.2	.1	<	.1	.0	.0	.1	.1	<	.1
Railroad equipment	<	<	.0	.0	.0	.0	<	<	<	<

See explanatory information, if any, and SOURCE at end of table.

Table A-6. R&D scientific, engineering, and technical (SET) personnel and SET managers in manufacturing industries, by detailed industry of employment: 1992

(Filled jobs in thousands)

Page 5 of 5

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Transportation equipment—continued										
Motorcycles, bicycles, and parts	0.1	0.1	<	0.1	<	<	0.1	0.1	<	0.1
Guided missiles, space vehicles, parts	8.6	4.5	.5	2.6	1.0	2.6	5.9	7.2	1.2	2.3
Miscellaneous transportation equipment	.2	.1	<	.2	.0	.0	<	.1	.1	.1
Instruments and related products	33.1	17.4	3.9	19.0	2.9	7.5	19.5	24.0	6.8	13.7
Search and navigation equipment	8.2	4.3	1.0	4.8	.7	1.8	5.0	6.2	1.5	2.9
Measuring and controlling devices	14.4	7.6	1.4	6.8	.8	2.0	9.8	12.0	2.4	4.9
Medical instruments and supplies	8.4	4.4	1.3	6.2	1.1	2.8	3.9	4.8	2.1	4.2
Ophthalmic goods	.2	.1	<	.1	<	.1	.1	.1	.1	.2
Photographic equipment and supplies	1.9	1.0	.2	1.0	.3	.8	.7	.8	.7	1.4
Watches, clocks, watchcases & parts	<	<	<	.1	.0	.0	<	<	<	<
Miscellaneous manufacturing industries	1.0	.5	.2	1.0	.1	.3	.3	.3	.4	.8
Jewelry, silverware, and plated ware	<	<	.0	.0	.0	.0	<	<	.0	.0
Musical instruments	.1	<	.0	.0	.0	.0	<	<	<	.1
Toys and sporting goods	.4	.2	.1	.5	<	.1	.1	.1	.2	.3
Pens, pencils, office, & art supplies	.3	.1	<	.2	.1	.2	.1	.1	.1	.2
Costume jewelry and notions	<	<	.0	.0	.0	.0	.0	.0	<	<
Miscellaneous manufactures	.2	.1	<	.2	<	<	.1	.1	.1	.1

NOTE: Because of rounding, components may not add to totals.

KEY:
< = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.
N.e.c. = Not elsewhere classified

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-7. R&D scientists in manufacturing industries, by broad industry group of employment and detailed occupation: 1992

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Physical	Mathematical	Life	Social	Computer
Total manufacturing	37.8	19.0	0.8	14.0	0.0	4.0
Food and kindred products	1.1	.9	.0	.2	.0	<
Tobacco products	.2	.1	.0	<	.0	<
Textile mill products	.1	.1	.0	.0	.0	.0
Apparel and other textile products	.1	.0	.0	.0	.0	.1
Lumber and wood products	.1	<	.0	.1	.0	.0
Furniture and fixtures	.0	.0	.0	.0	.0	.0
Paper and allied products	.3	.2	.0	<	.0	<
Printing and publishing	.1	<	.0	.0	.0	.1
Chemicals and allied products	26.6	13.1	.2	12.4	.0	.9
Petroleum and coal products	1.1	1.0	.0	<	.0	.1
Rubber and miscellaneous plastics products	.4	.4	.0	<	.0	<
Leather and leather products	<	.0	.0	.0	.0	<
Stone, clay and glass products	.5	.4	.0	<	.0	<
Primary metal industries	.2	.2	.0	.0	.0	<
Fabricated metal products	.5	.4	.0	.1	.0	<
Industrial machinery and equipment	2.0	.1	.1	<	.0	1.7
Electronic and other electric equipment	.4	.3	.0	.0	.0	.2
Transportation equipment	1.6	.6	.5	<	.0	.5
Instruments and related products	2.3	1.0	.0	1.1	.0	.2
Misc. manufacturing industries	.1	.1	.0	.0	.0	<

NOTE: Because of rounding, components may not add to totals.

KEY: < = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-8. R&D engineers in manufacturing industries, by broad industry group of employment and detailed occupation: 1992

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Aeronautical	Civil	Electrical/ electronics	Computer	Mechanical	Industrial	Sales	Other
Total manufacturing	81.4	3.3	0.1	29.0	11.0	14.5	2.0	0.0	21.5
Food and kindred products	.4	0	0	0	0	.1	.1	0	.2
Tobacco products	0	0	0	0	0	0	0	0	0
Textile mill products	.1	0	0	0	0	<	<	0	<
Apparel and other textile products	.2	0	0	0	0	.2	<	0	0
Lumber and wood products	<	0	0	0	0	<	<	0	<
Furniture and fixtures	.2	0	0	0	0	.1	<	0	.1
Paper and allied products	.4	0	0	0	<	<	<	0	.3
Printing and publishing	.1	0	0	0	0	0	<	0	.1
Chemicals and allied products	5.2	0	0	.2	0	.6	.3	0	4.2
Petroleum and coal products	1.6	0	0	0	0	0	0	0	1.6
Rubber and miscellaneous plastics products	1.7	0	0	.1	<	.8	.1	0	.7
Leather and leather products	<	0	0	0	0	<	<	0	0
Stone, clay and glass products	.6	0	0	<	<	.1	<	0	.4
Primary metal industries	1.4	0	0	.1	0	.1	.1	0	1.1
Fabricated metal products	1.6	0	<	.2	.1	.9	.1	0	.4
Industrial machinery and equipment	20.2	0	<	8.4	6.7	3.4	.3	0	1.4
Electronic and other electric equipment	11.1	0	0	6.1	1.5	1.0	.2	0	2.4
Transportation equipment	16.8	3.3	<	1.5	.7	4.3	.2	0	6.7
Instruments and related products	19.5	0	0	12.4	2.0	2.8	.5	0	1.8
Misc. manufacturing industries	.3	0	0	0	0	.2	<	0	.1

NOTE: Because of rounding, components may not add to totals.

KEY: < = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-9. R&D technicians in manufacturing industries, by broad industry group of employment and detailed occupation: 1992

(Filled jobs in thousands)

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Broad industry group of employment	Total	Job Category			Engineering				
						Job Category			
		Computer programmer	Drafter	Science	Total	Electrical/ electronics	Mechanical	Civil	Other
Total manufacturing	49.8	6.2	5.2	19.5	18.8	7.2	2.8	0.0	8.8
Food and kindred products	1.5	<	.0	1.4	<	.0	.0	.0	<
Tobacco products	.1	.0	.0	.1	.0	.0	.0	.0	.0
Textile mill products	.3	.0	.0	.2	<	.0	.0	.0	<
Apparel and other textile products	.2	.0	.0	<	.1	0	.0	.0	.1
Lumber and wood products	.1	<	.1	<	<	.0	.0	.0	<
Furniture and fixtures	.3	<	.2	.0	.1	.0	.0	.0	.1
Paper and allied products	.6	.0	<	.5	.1	.0	.0	.0	.1
Printing and publishing	.2	.1	.0	.0	.1	.0	.0	.0	.1
Chemicals and allied products	13.7	.2	.1	12.5	.9	.1	.2	.0	.6
Petroleum and coal products	2.0	.0	.0	1.5	.5	.0	.0	.0	.5
Rubber and misc. plastics products	1.4	<	.3	.6	.6	.1	.1	.0	.4
Leather and leather products	<	.0	.0	<	.0	.0	.0	.0	.0
Stone, clay and glass products	.7	.0	<	.2	.4	.0	.1	.0	.4
Primary metal industries	1.3	.0	<	.4	.9	.1	.0	.0	.8
Fabricated metal products	1.5	<	.7	.2	.6	.1	.2	.0	.3
Industrial machinery and equipment	9.7	4.3	1.6	.3	3.5	2.1	.8	.0	.6
Electronic & other electric equipment	4.1	.4	.8	.1	2.8	2.1	.3	.0	.4
Transportation equipment	4.9	.5	.2	.2	4.0	.3	.2	.0	3.4
Instruments and related products	6.8	.7	1.1	1.2	3.8	2.3	.9	.0	.6
Miscellaneous manufacturing industries	.4	<	.1	.1	.2	.0	<	.0	.1

NOTE: Because of rounding, components may not add to totals.

KEY:
< = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Meat products (SIC 2010):			
Scientific and technical personnel	280	<	(nc)
Scientists	30	.0	(nc)
Chemists	10	.0	13
Life scientists	20	.0	0
Managers of scientific and technical personnel	90	<	0
Engineers	30	.0	(nc)
Industrial	10	.0	16
Mechanical	10	.0	14
Other, n.e.c	10	.0	(nc)
Technicians	130	<	(nc)
Biological science technicians	70	<	46
Chemical technicians, except health	50	<	16
All other physical and life science technicians	10	.0	(nc)
Dairy products (SIC 2020):			
Scientific and technical personnel	190	.1	(nc)
Scientists	40	<	(nc)
Chemists	20	<	30
Life scientists	20	<	28
Managers of scientific and technical personnel	10	.0	14
Engineers	20	<	(nc)
Other, n.e.c	20	<	(nc)
Technicians	120	.1	(nc)
Biological science technicians	100	.1	27
Chemical technicians, except health	20	<	32
Preserved fruits & vegetables (SIC 2030):			
Scientific and technical personnel	350	.1	(nc)
Scientists	80	<	(nc)
Chemists	60	<	2
Life scientists	20	.0	14
Managers of scientific and technical personnel	60	<	9
Engineers	40	.0	(nc)
Industrial	20	.0	0
Mechanical	10	.0	0
Other, n.e.c	10	.0	(nc)
Technicians	170	<	(nc)
All other engineering technicians	10	.0	(nc)
Biological science technicians	120	<	5
Chemical technicians, except health	40	<	7
Grain mill products (SIC 2040):			
Scientific and technical personnel	1,540	1.2	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Grain mill products (SIC 2040) — continued:			
Scientists	580	0.4	(nc)
Chemists	470	.4	3
Life scientists	80	.1	8
Computer analysts	30	<	(nc)
Managers of scientific and technical personnel	90	.1	8
Engineers	200	.2	(nc)
Industrial	40	<	11
Mechanical	70	<	19
Other, n.e.c	90	.1	(nc)
Technicians	670	.5	(nc)
Computer programmers	10	<	0
All other engineering technicians	30	<	(nc)
Biological science technicians	270	.2	18
Chemical technicians, except health	340	.3	1
All other physical and life science technicians	20	<	(nc)
Bakery products (SIC 2050):			
Scientific and technical personnel	80	<	(nc)
Scientists	40	<	(nc)
Chemists	30	<	54
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	30	<	15
Technicians	10	.0	0
Biological science technicians	10	.0	0
Sugar and confectionery products (SIC 2060):			
Scientific and technical personnel	250	.2	(nc)
Scientists	80	.1	(nc)
Chemists	60	<	0
All other physical scientists	10	.0	(nc)
Life scientists	10	<	25
Managers of scientific and technical personnel	50	<	2
Engineers	20	<	(nc)
Other, n.e.c	20	<	(nc)
Technicians	100	.1	(nc)
Biological science technicians	60	.1	2
Chemical technicians, except health	40	<	0
Fats and oils (SIC 2070):			
Scientific and technical personnel	180	.5	(nc)
Scientists	70	.2	(nc)
Chemists	30	.1	15

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Fats and oils (SIC 2070) — continued:			
Scientists — continued			
All other physical scientists	20	<	(nc)
Life scientists	20	.1	0
Engineers	20	<	(nc)
Other, n.e.c	20	<	(nc)
Technicians	90	.2	(nc)
Biological science technicians	60	.2	3
Chemical technicians, except health	30	.1	0
Beverages (SIC 2080):			
Scientific and technical personnel	280	.1	(nc)
Scientists	120	<	(nc)
Chemists	90	<	12
All other physical scientists	10	.0	(nc)
Life scientists	10	.0	0
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	50	<	18
Engineers	10	.0	(nc)
Other, n.e.c	10	.0	(nc)
Technicians	100	<	(nc)
All other engineering technicians	10	.0	(nc)
Biological science technicians	40	<	3
Chemical technicians, except health	50	<	3
Misc. food and kindred products (SIC 2090):			
Scientific and technical personnel	240	.1	(nc)
Scientists	80	<	(nc)
Chemists	40	<	17
Life scientists	40	<	25
Managers of scientific and technical personnel	30	<	8
Engineers	20	.0	(nc)
Industrial	10	.0	12
Mechanical	10	.0	0
Technicians	110	<	(nc)
Biological science technicians	100	<	7
Chemical technicians, except health	10	.0	6
Cigarettes (SIC 2110):			
Scientific and technical personnel	180	.5	(nc)
Scientists	130	.4	(nc)
All other physical scientists	80	.2	(nc)
Life scientists	50	.1	0

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Cigarettes (SIC 2110) — continued:			
Technicians	50	0.2	(nc)
All other physical and life science technicians	50	.1	(nc)
Chewing and smoking tobacco (SIC 2130):			
Scientific and technical personnel	20	.6	(nc)
Scientists	10	.2	(nc)
All other physical scientists	10	.2	(nc)
Technicians	10	.3	0
Chemical technicians, except health	10	.3	0
Broadwoven fabric mills, cotton (SIC 2210):			
Scientific and technical personnel	20	.0	(nc)
Engineers	10	.0	(nc)
Other, n.e.c	10	.0	(nc)
Technicians	10	.0	(nc)
All other physical and life science technicians	10	.0	(nc)
Broadwoven fabric mills, manmade (SIC 2220):			
Scientific and technical personnel	20	<	(nc)
Technicians	20	<	(nc)
All other engineering technicians	10	<	(nc)
All other physical and life science technicians	10	<	(nc)
Broadwoven fabric mills, wool (SIC 2230):			
Scientific and technical personnel	30	.2	(nc)
Scientists	10	<	(nc)
All other physical scientists	10	<	(nc)
Technicians	20	.1	(nc)
All other physical and life science technicians	20	.1	(nc)
Narrow fabric mills (SIC 2240):			
Scientific and technical personnel	30	.2	(nc)
Managers of scientific and technical personnel	10	<	0
Engineers	10	<	(nc)
Other, n.e.c	10	<	(nc)
Technicians	10	<	(nc)
All other physical and life science technicians	10	<	(nc)
Knitting mills (SIC 2250):			
Scientific and technical personnel	110	<	(nc)
Scientists	10	.0	0
Chemists	10	.0	0

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Knitting mills (SIC 2250) — continued:			
Managers of scientific and technical personnel	20	0.0	0
Engineers	10	.0	(nc)
Mechanical	10	.0	14
Technicians	70	<	(nc)
All other engineering technicians	10	.0	(nc)
All other physical and life science technicians	60	<	(nc)
Textile finishing, except wool (SIC 2260):			
Scientific and technical personnel	80	.1	(nc)
Scientists	50	.1	15
Chemists	50	.1	15
Managers of scientific and technical personnel	10	<	0
Technicians	20	<	0
Chemical technicians, except health	20	<	0
Carpets and rugs (SIC 2270):			
Scientific and technical personnel	70	.1	(nc)
Scientists	20	<	(nc)
Chemists	20	<	0
Managers of scientific and technical personnel	20	<	34
Engineers	10	<	(nc)
Other, n.e.c	10	<	(nc)
Technicians	20	<	(nc)
Chemical technicians, except health	20	<	38
Yarn and thread mills (SIC 2280):			
Scientific and technical personnel	30	<	(nc)
Managers of scientific and technical personnel	10	.0	32
Engineers	10	.0	(nc)
Other, n.e.c	10	.0	(nc)
Technicians	10	<	(nc)
All other engineering technicians	10	<	(nc)
Miscellaneous textile goods (SIC 2290):			
Scientific and technical personnel	180	.3	(nc)
Scientists	50	.1	(nc)
Chemists	50	.1	6
Managers of scientific and technical personnel	40	.1	8

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Miscellaneous textile goods (SIC 2290) — continued:			
Engineers	10	<	(nc)
Mechanical	10	<	0
Technicians	80	.1	(nc)
All other engineering technicians	20	<	(nc)
Chemical technicians, except health	60	.1	0
Men's & boys' furnishings (SIC 2320):			
Scientific and technical personnel	50	.0	(nc)
Scientists	10	.0	(nc)
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	20	.0	0
Engineers	20	.0	(nc)
Mechanical	20	.0	0
Women's and misses' outerwear (SIC 2330):			
Scientific and technical personnel	70	.0	(nc)
Scientists	30	.0	(nc)
Computer analysts	30	.0	(nc)
Managers of scientific and technical personnel	30	.0	7
Engineers	10	.0	(nc)
Other, n.e.c	10	.0	(nc)
Women's and children's undergarments (SIC 2340):			
Scientific and technical personnel	20	<	(nc)
Scientists	10	.0	(nc)
Computer analysts	10	.0	(nc)
Engineers	10	<	0
Industrial	10	<	0
Misc. fabricated textile products (SIC 2390):			
Scientific and technical personnel	450	.2	(nc)
Scientists	40	<	(nc)
Computer analysts	40	<	(nc)
Managers of scientific and technical personnel	50	<	0
Engineers	180	.1	(nc)
Industrial	10	.0	0
Other, n.e.c	170	.1	(nc)
Technicians	180	.1	(nc)
All other engineering technicians	140	.1	(nc)
All other physical and life science technicians	40	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Logging (SIC 2410):			
Scientific and technical personnel	20	<	2
Scientists	20	<	2
Foresters and conservation scientists	20	<	2
Sawmills and planing mills (SIC 2420):			
Scientific and technical personnel	50	<	(nc)
Scientists	50	<	(nc)
All other life scientists	50	<	(nc)
Millwork, plywood & structural members (SIC 2430):			
Scientific and technical personnel	230	.1	(nc)
Managers of scientific and technical personnel	70	<	5
Engineers	40	<	(nc)
Other, n.e.c	40	<	(nc)
Technicians	120	<	(nc)
Computer programmers	10	.0	7
Drafters	60	<	12
All other engineering technicians	50	<	(nc)
Miscellaneous wood products (SIC 2490):			
Scientific and technical personnel	60	<	(nc)
Scientists	20	<	(nc)
Physical scientists	20	<	0
Managers of scientific and technical personnel	10	<	0
Engineers	10	<	(nc)
Other, n.e.c	10	<	(nc)
Technicians	20	<	(nc)
Drafters	10	<	0
Physical and life science technicians	10	<	0
Household furniture (SIC 2510):			
Scientific and technical personnel	120	<	(nc)
Managers of scientific and technical personnel	30	<	12
Engineers	40	<	(nc)
Mechanical	30	<	19
Other, n.e.c	10	.0	(nc)
Technicians	50	<	(nc)
Drafters	40	<	23
All other engineering technicians	10	.0	(nc)
Office furniture (SIC 2520):			
Scientific and technical personnel	90	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Office furniture (SIC 2520) — continued:			
Managers of scientific and technical personnel	20	<	5
Engineers	30	<	(nc)
Mechanical	20	<	0
Other, n.e.c	10	<	(nc)
Technicians	40	.1	(nc)
Drafters	30	<	15
All other engineering technicians	10	<	(nc)
Public building & related furniture (SIC 2530):			
Scientific and technical personnel	90	.2	(nc)
Managers of scientific and technical personnel	10	<	0
Engineers	30	.1	(nc)
Other, n.e.c	30	.1	(nc)
Technicians	50	.1	(nc)
Drafters	30	.1	25
All other engineering technicians	20	<	(nc)
Partitions and fixtures (SIC 2540):			
Scientific and technical personnel	90	.1	(nc)
Managers of scientific and technical personnel	20	<	5
Engineers	20	<	(nc)
Mechanical	20	<	0
Technicians	50	.1	(nc)
Computer programmers	10	<	0
Drafters	40	<	11
Miscellaneous furniture and fixtures (SIC 2590):			
Scientific and technical personnel	180	.5	(nc)
Managers of scientific and technical personnel	20	<	0
Engineers	70	.2	(nc)
Other, n.e.c	70	.2	(nc)
Technicians	90	.2	(nc)
Drafters	50	.1	36
All other engineering technicians	40	.1	(nc)
Pulp mills (SIC 2610):			
Scientific and technical personnel	80	.6	(nc)
Scientists	30	.2	(nc)
All other physical scientists	30	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Pulp mills (SIC 2610) — continued:			
Engineers	10	0.1	(nc)
Other, n.e.c	10	.1	(nc)
Technicians	40	.3	(nc)
All other physical and life science technicians	40	.3	(nc)
Paper mills (SIC 2620):			
Scientific and technical personnel	380	.2	(nc)
Scientists	100	<	(nc)
Chemists	90	<	0
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	50	<	0
Engineers	110	.1	(nc)
Chemical	70	<	0
Other, n.e.c	40	<	(nc)
Technicians	120	.1	(nc)
All other engineering technicians	40	<	(nc)
Chemical technicians, except health	80	<	0
Paperboard mills (SIC 2630):			
Scientific and technical personnel	110	.2	(nc)
Scientists	20	<	(nc)
All other physical scientists	20	<	(nc)
Engineers	30	<	(nc)
Other, n.e.c	30	<	(nc)
Technicians	60	.1	(nc)
All other physical and life science technicians	60	.1	(nc)
Paperboard containers and boxes (SIC 2650):			
Scientific and technical personnel	280	.1	(nc)
Scientists	30	.0	(nc)
All other physical scientists	20	.0	(nc)
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	30	<	11
Engineers	110	<	(nc)
Other, n.e.c	110	<	(nc)
Technicians	110	<	(nc)
Drafters	10	.0	21
All other physical and life science technicians	100	<	(nc)
Misc. converted paper products (SIC 2670):			
Scientific and technical personnel	530	.2	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Misc. converted paper products (SIC 2670) — continued:			
Scientists	110	<	(nc)
Chemists	70	<	6
All other physical scientists	10	0	(nc)
Life scientists	20	0	0
Computer analysts	10	0	(nc)
Managers of scientific and technical personnel	80	<	4
Engineers	90	<	(nc)
Chemical	50	<	7
Industrial	10	0	0
Other, n.e.c	30	<	(nc)
Technicians	250	1	(nc)
All other engineering technicians	70	<	(nc)
Chemical technicians, except health	170	1	8
All other physical and life science technicians	10	0	(nc)
Newspapers (SIC 2710):			
Scientific and technical personnel	60	0	(nc)
Scientists	40	0	(nc)
Computer analysts	40	0	(nc)
Managers of scientific and technical personnel	20	0	18
Periodicals (SIC 2720):			
Scientific and technical personnel	70	<	(nc)
Scientists	30	<	(nc)
Computer analysts	30	<	(nc)
Managers of scientific and technical personnel	10	<	0
Technicians	30	<	14
Computer programmers	30	<	14
Books (SIC 2730):			
Scientific and technical personnel	60	<	(nc)
Managers of scientific and technical personnel	20	<	18
Engineers	20	<	(nc)
Other, n.e.c	20	<	(nc)
Technicians	20	<	(nc)
Computer programmers	20	<	19
Miscellaneous publishing (SIC 2740):			
Scientific and technical personnel	20	<	(nc)
Scientists	10	<	(nc)
Computer analysts	10	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Miscellaneous publishing (SIC 2740) — continued:			
Technicians	10	<	(nc)
Computer programmers	10	<	20
Commercial printing (SIC 2750):			
Scientific and technical personnel	130	.0	(nc)
Scientists	40	.0	(nc)
Physical scientists	20	.0	64
Computer analysts	20	.0	59
Managers of scientific and technical personnel	20	.0	24
Engineers	20	.0	(nc)
Mechanical	20	.0	24
Technicians	50	.0	(nc)
Computer programmers	30	.0	8
All other engineering technicians	20	.0	(nc)
Manifold business forms (SIC 2760):			
Scientific and technical personnel	170	.3	(nc)
Scientists	30	<	(nc)
Physical scientists	20	<	0
Computer analysts	10	<	(nc)
Engineers	90	.2	(nc)
Other, n.e.c	90	.2	(nc)
Technicians	50	.1	(nc)
All other engineering technicians	50	.1	(nc)
Greeting cards (SIC 2770):			
Scientific and technical personnel	10	<	(nc)
Technicians	10	<	(nc)
All other engineering technicians	10	<	(nc)
Blankbooks and bookbinding (SIC 2780):			
Scientific and technical personnel	60	.1	(nc)
Scientists	10	<	(nc)
Computer analysts	10	<	(nc)
Managers of scientific and technical personnel	20	<	0
Engineers	10	<	(nc)
Other, n.e.c	10	<	(nc)
Technicians	20	<	(nc)
All other engineering technicians	20	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Printing trade services (SIC 2790):			
Scientific and technical personnel	30	<	(nc)
Scientists	10	<	(nc)
Computer analysts	10	<	(nc)
Managers of scientific and technical personnel	10	<	0
Technicians	10	<	0
Computer programmers	10	<	0
Industrial inorganic chemicals (SIC 2810):			
Scientific and technical personnel	4,270	2.9	(nc)
Scientists	1,390	1.0	(nc)
Chemists	990	.7	5
All other physical scientists	90	.1	(nc)
Biological scientists	300	.2	3
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	490	.3	3
Engineers	1,320	.9	(nc)
Chemical	500	.4	4
Mechanical	110	.1	2
Metallurgical/metallurgists	20	<	13
Other, n.e.c	690	.5	(nc)
Technicians	1,070	.7	(nc)
Drafters	40	<	0
Electrical/electronics engineering technicians	30	<	0
Mechanical engineering technicians	50	<	0
All other engineering technicians	20	<	(nc)
Biological science technicians	120	.1	2
Chemical technicians, except health	800	.6	5
All other physical and life science technicians	10	.0	(nc)
Plastics materials and synthetics (SIC 2820):			
Scientific and technical personnel	4,900	2.7	(nc)
Scientists	1,030	.6	(nc)
Chemists	910	.5	2
All other physical scientists	60	<	(nc)
All other life scientists	40	<	(nc)
Computer analysts	20	.0	(nc)
Managers of scientific and technical personnel	400	.2	2
Engineers	1,350	.7	(nc)
Chemical	730	.4	1
Electrical/electronics	80	<	0
Industrial	10	.0	0
Mechanical	330	.2	0
Metallurgical/metallurgists	10	.0	0
Other, n.e.c	190	.1	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Plastics materials and synthetics (SIC 2820) — continued:			
Technicians	2,120	1.2	(nc)
Mechanical engineering technicians	130	.1	0
All other engineering technicians	200	.1	(nc)
Chemical technicians, except health	1,510	.8	1
All other physical and life science technicians	280	.2	(nc)
Drugs (SIC 2830):			
Scientific and technical personnel	23,800	7.7	(nc)
Scientists	17,220	5.6	(nc)
All other mathematicians	210	.1	0
Chemists	4,980	1.6	1
All other physical scientists	100	<	(nc)
Biological scientists	7,420	2.4	1
Medical scientists	2,460	.8	<
All other life scientists	1,210	.4	(nc)
Computer analysts	840	.3	(nc)
Managers of scientific and technical personnel	1,530	.5	5
Engineers	600	.2	(nc)
Chemical	370	.1	0
Computer	30	.0	0
Electrical/electronics	20	.0	10
Industrial	90	<	0
Mechanical	30	<	6
Other, n.e.c	60	<	(nc)
Technicians	4,450	1.4	(nc)
Computer programmers	210	.1	0
Drafters	10	.0	0
Electrical/electronics engineering technicians	40	<	0
Mechanical engineering technicians	20	.0	0
All other engineering technicians	20	.0	(nc)
Biological science technicians	1,580	.5	6
Chemical technicians, except health	2,440	.8	2
All other physical and life science technicians	130	<	(nc)
Soap, cleaners, and toilet goods (SIC 2840):			
Scientific and technical personnel	2,400	1.4	(nc)
Scientists	1,330	.8	(nc)
Chemists	1,220	.8	3
All other physical scientists	30	<	(nc)
Biological scientists	70	<	0
All other life scientists	10	.0	(nc)
Managers of scientific and technical personnel	360	.2	4
Engineers	250	.1	(nc)
Chemical	120	.1	2
Industrial	40	<	0
Mechanical	30	<	0

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Soap, cleaners, and toilet goods (SIC 2840) — continued:			
Engineers — continued			
Other, n.e.c	60	<	(nc)
Technicians	460	.3	(nc)
All other engineering technicians	30	<	(nc)
Biological science technicians	40	<	0
Chemical technicians, except health	390	.2	5
Paints and allied products (SIC 2850):			
Scientific and technical personnel	1,980	3.2	(nc)
Scientists	990	1.6	(nc)
Chemists	920	1.5	5
All other physical scientists	50	.1	(nc)
Computer analysts	20	<	(nc)
Managers of scientific and technical personnel	120	.2	6
Engineers	40	.1	(nc)
Chemical	20	<	33
Other, n.e.c	20	<	(nc)
Technicians	830	1.3	(nc)
All other engineering technicians	30	<	(nc)
Chemical technicians, except health	800	1.3	11
Industrial organic chemicals (SIC 2860):			
Scientific and technical personnel	8,820	5.2	(nc)
Scientists	3,360	2.0	(nc)
All other mathematicians	20	.0	0
Chemists	2,560	1.6	1
All other physical scientists	150	.1	(nc)
Biological scientists	430	.3	13
Medical scientists	50	<	0
All other life scientists	100	<	(nc)
Computer analysts	50	<	(nc)
Managers of scientific and technical personnel	370	.2	3
Engineers	1,250	.7	(nc)
Chemical	850	.5	5
Electrical/electronics	20	.0	0
Mechanical	30	<	0
Metallurgical/metallurgists	30	<	0
Other, n.e.c	320	.2	(nc)
Technicians	3,840	2.3	(nc)
Electrical/electronics engineering technicians	20	<	0
All other engineering technicians	270	.2	(nc)
Biological science technicians	150	.1	45
Chemical technicians, except health	3,370	2.0	<
All other physical and life science technicians	30	<	(nc)

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Agricultural chemicals (SIC 2870):			
Scientific and technical personnel	840	1.3	(nc)
Scientists	490	.8	(nc)
Chemists	220	.4	1
All other physical scientists	10	<	(nc)
Biological scientists	230	.4	0
All other life scientists	20	<	(nc)
Computer analysts	10	<	(nc)
Managers of scientific and technical personnel	30	<	3
Engineers	100	.2	(nc)
Chemical	40	.1	0
Other, n.e.c	60	.1	(nc)
Technicians	220	.4	(nc)
All other engineering technicians	10	<	(nc)
Biological science technicians	100	.2	1
All other physical and life science technicians	110	.2	(nc)
Miscellaneous chemical products (SIC 2890):			
Scientific and technical personnel	2,120	2.1	(nc)
Scientists	860	.9	(nc)
Chemists	770	.8	5
All other physical scientists	40	<	(nc)
Biological scientists	30	<	53
All other life scientists	20	<	(nc)
Managers of scientific and technical personnel	230	.2	12
Engineers	280	.3	(nc)
Chemical	160	.2	28
Industrial	20	<	0
Mechanical	70	.1	23
Other, n.e.c	30	<	(nc)
Technicians	750	.8	(nc)
Drafters	10	.0	0
All other engineering technicians	70	.1	(nc)
Chemical technicians, except health	600	.6	7
All other physical and life science technicians	70	.1	(nc)
Petroleum refining (SIC 2910):			
Scientific and technical personnel	4,540	3.5	(nc)
Scientists	990	.8	(nc)
Chemists	590	.5	<
All other physical scientists	280	.2	(nc)
Life scientists	40	<	0
Computer analysts	80	.1	(nc)
Managers of scientific and technical personnel	60	<	2

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Petroleum refining (SIC 2910) — continued:			
Engineers	1,620	1.3	(nc)
Chemical	910	.7	0
Other, n.e.c	710	.6	(nc)
Technicians	1,870	1.5	(nc)
All other engineering technicians	520	.4	(nc)
Chemical technicians, except health	1,080	.8	0
All other physical and life science technicians	270	.2	(nc)
Asphalt paving and roofing materials (SIC 2950):			
Scientific and technical personnel	70	.2	(nc)
Scientists	30	.1	(nc)
Chemists	30	.1	8
Technicians	40	.1	(nc)
Chemical technicians, except health	40	.1	11
Misc. petroleum and coal products (SIC 2990):			
Scientific and technical personnel	270	2.2	(nc)
Scientists	120	1.0	(nc)
Chemists	120	.9	8
Managers of scientific and technical personnel	40	.3	12
Technicians	110	.9	(nc)
Chemical technicians, except health	110	9	4
Tires and inner tubes (SIC 3010):			
Scientific and technical personnel	190	.2	(nc)
Scientists	30	<	(nc)
Chemists	30	<	0
Managers of scientific and technical personnel	40	<	0
Engineers	80	.1	(nc)
Chemical	30	<	0
Other, n.e.c	50	.1	(nc)
Technicians	40	<	(nc)
All other engineering technicians	30	<	(nc)
Chemical technicians, except health	10	<	8
Hose & belting & gaskets & packing (SIC 3050):			
Scientific and technical personnel	300	.5	(nc)
Scientists	30	<	(nc)
Chemists	20	<	0
Life scientists	10	<	0
Managers of scientific and technical personnel	60	.1	7

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Hose & belting & gaskets & packing (SIC 3050) — continued:			
Engineers	120	0.2	(nc)
Chemical	30	<	4
Mechanical	70	.1	1
Other, n.e.c	20	<	(nc)
Technicians	90	.1	(nc)
Drafters	10	<	13
Mechanical engineering technicians	10	<	8
All other engineering technicians	40	.1	(nc)
Chemical technicians, except health	30	<	0
Fabricated rubber products, nec (SIC 3060):			
Scientific and technical personnel	710	.6	(nc)
Scientists	60	<	(nc)
Chemists	50	<	6
Computer analysts	10	<	(nc)
Managers of scientific and technical personnel	90	.1	4
Engineers	280	.3	(nc)
Chemical	110	.1	21
Electrical/electronics	10	<	0
Mechanical	130	.1	4
Other, n.e.c	30	<	(nc)
Technicians	280	.2	(nc)
Drafters	30	<	0
Mechanical engineering technicians	70	.1	0
All other engineering technicians	80	.1	(nc)
Chemical technicians, except health	100	.1	26
Miscellaneous plastics products, nec (SIC 3080):			
Scientific and technical personnel	2,970	.4	(nc)
Scientists	310	<	(nc)
Chemists	150	<	29
All other physical scientists	160	<	(nc)
Managers of scientific and technical personnel	490	.1	18
Engineers	1,160	.2	(nc)
Chemical	360	<	12
Computer	20	.0	39
Electrical/electronics	70	<	36
Industrial	80	<	27
Mechanical	530	.1	15
Other, n.e.c	100	<	(nc)
Technicians	1,010	.1	(nc)
Computer programmers	10	.0	44
Drafters	250	<	46
Electrical/electronics engineering technicians	80	<	16

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Miscellaneous plastics products, nec (SIC 3080) — continued:			
Technicians — continued			
Mechanical engineering technicians	50	0.0	3
All other engineering technicians	210	<	(nc)
Chemical technicians, except health	400	.1	13
All other physical and life science technicians	10	.0	(nc)
Leather tanning and finishing (SIC 3110):			
Scientific and technical personnel	30	.2	(nc)
Technicians	30	.2	(nc)
Chemical technicians, except health	30	.2	0
Footwear, except rubber (SIC 3140):			
Scientific and technical personnel	40	<	(nc)
Scientists	20	<	(nc)
Computer analysts	20	<	(nc)
Engineers	20	<	(nc)
Industrial	20	<	0
Luggage (SIC 3160):			
Scientific and technical personnel	10	.1	(nc)
Engineers	10	.1	(nc)
Other, n.e.c	10	.1	(nc)
Glass and glassware, pressed or blown (SIC 3220):			
Scientific and technical personnel	750	.9	(nc)
Scientists	260	.3	(nc)
All other physical scientists	200	.2	(nc)
Life scientists	20	<	0
Computer analysts	40	<	(nc)
Managers of scientific and technical personnel	30	<	0
Engineers	210	.3	(nc)
Other, n.e.c	210	.3	(nc)
Technicians	250	.3	(nc)
Drafters	10	<	0
All other engineering technicians	160	.2	(nc)
All other physical and life science technicians	80	.1	(nc)
Products of purchased glass (SIC 3230):			
Scientific and technical personnel	390	.6	(nc)
Scientists	150	.2	(nc)
Chemists	40	.1	0
All other physical scientists	110	.2	(nc)
Managers of scientific and technical personnel	30	<	0

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Products of purchased glass (SIC 3230) — continued:			
Engineers	80	0.1	(nc)
Chemical	10	<	0
Mechanical	20	<	0
Metallurgical/metallurgists	30	<	0
Other, n.e.c	20	<	(nc)
Technicians	130	.2	(nc)
Drafters	10	<	4
Mechanical engineering technicians	60	.1	0
All other engineering technicians	20	<	(nc)
All other physical and life science technicians	40	.1	(nc)
Structural clay products (SIC 3250):			
Scientific and technical personnel	120	.3	(nc)
Scientists	10	<	(nc)
All other physical scientists	10	<	(nc)
Managers of scientific and technical personnel	20	<	0
Engineers	50	.1	(nc)
Chemical	10	<	18
Metallurgical/metallurgists	40	.1	6
Technicians	40	.1	(nc)
All other engineering technicians	10	<	(nc)
All other physical and life science technicians	30	.1	(nc)
Pottery and related products (SIC 3260):			
Scientific and technical personnel	150	.4	(nc)
Scientists	20	<	(nc)
All other physical scientists	20	<	(nc)
Engineers	50	.1	(nc)
Metallurgical/metallurgists	40	.1	0
Other, n.e.c	10	<	(nc)
Technicians	80	.2	(nc)
All other engineering technicians	70	.2	(nc)
All other physical and life science technicians	10	<	(nc)
Concrete, gypsum, and plaster products (SIC 3270):			
Scientific and technical personnel	30	.0	(nc)
Managers of scientific and technical personnel	20	.0	58
Engineers	10	.0	(nc)
Other, n.e.c	10	.0	(nc)
Misc. nonmetallic mineral products (SIC 3290):			
Scientific and technical personnel	470	.6	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Misc. nonmetallic mineral products (SIC 3290) — continued:			
Scientists	30	<	(nc)
Chemists	30	<	0
Managers of scientific and technical personnel	50	.1	3
Engineers	180	.2	(nc)
Chemical	20	<	0
Industrial	10	<	18
Mechanical	20	<	67
Metallurgical/metallurgists	110	.1	0
Other, n.e.c	20	<	(nc)
Technicians	210	.3	(nc)
All other engineering technicians	120	.2	(nc)
Chemical technicians, except health	90	.1	0
Blast furnace and basic steel products (SIC 3310):			
Scientific and technical personnel	960	.3	(nc)
Scientists	60	<	(nc)
Chemists	40	<	39
All other physical scientists	20	.0	(nc)
Managers of scientific and technical personnel	60	<	38
Engineers	390	.1	(nc)
Mechanical	10	.0	0
Metallurgical/metallurgists	280	.1	34
Other, n.e.c	100	<	(nc)
Technicians	450	.2	(nc)
Drafters	10	.0	0
All other engineering technicians	420	.2	(nc)
All other physical and life science technicians	20	.0	(nc)
Iron and steel foundries (SIC 3320):			
Scientific and technical personnel	40	<	(nc)
Managers of scientific and technical personnel	10	<	9
Engineers	20	.0	(nc)
Metallurgical/metallurgists	10	.0	17
Other, n.e.c	10	.0	(nc)
Technicians	10	<	(nc)
All other engineering technicians	10	<	(nc)
Primary nonferrous metals (SIC 3330):			
Scientific and technical personnel	160	.3	(nc)
Scientists	10	<	(nc)
Chemists	10	<	0

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Primary nonferrous metals (SIC 3330) — continued:			
Managers of scientific and technical personnel	20	<	0
Engineers	50	.1	(nc)
Metallurgical/metallurgists	50	.1	0
Technicians	80	.2	(nc)
All other engineering technicians	20	<	(nc)
All other physical and life science technicians	60	.1	(nc)
Secondary nonferrous metals (SIC 3340):			
Scientific and technical personnel	20	.1	(nc)
Scientists	10	<	(nc)
All other physical scientists	10	<	(nc)
Engineers	10	<	23
Metallurgical/metallurgists	10	<	23
Nonferrous rolling and drawing (SIC 3350):			
Scientific and technical personnel	1,590	.9	(nc)
Scientists	100	<	(nc)
All other physical scientists	70	<	(nc)
Computer analysts	30	<	(nc)
Managers of scientific and technical personnel	60	<	6
Engineers	770	.4	(nc)
Industrial	10	.0	0
Mechanical	90	<	0
Other, n.e.c	670	.4	(nc)
Technicians	660	4	(nc)
Electrical/electronics engineering technicians	80	<	0
All other engineering technicians	360	.2	(nc)
All other physical and life science technicians	220	.1	(nc)
Nonferrous foundries (castings) (SIC 3360):			
Scientific and technical personnel	60	.1	(nc)
Managers of scientific and technical personnel	20	<	6
Engineers	40	<	(nc)
Industrial	10	<	0
Mechanical	10	<	32
Metallurgical/metallurgists	10	<	10
Other, n.e.c	10	<	(nc)
Miscellaneous primary metal products (SIC 3390):			
Scientific and technical personnel	220	.8	(nc)
Scientists	40	.2	(nc)
Chemists	40	.2	0

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Miscellaneous primary metal products (SIC 3390) — continued:			
Managers of scientific and technical personnel	30	0.1	5
Engineers	60	.2	(nc)
Metallurgical/metallurgists	60	.2	8
Technicians	90	.3	(nc)
All other engineering technicians	10	<	(nc)
Chemical technicians, except health	80	.3	0
Metal cans and shipping containers (SIC 3410):			
Scientific and technical personnel	50	.1	(nc)
Engineers	10	<	(nc)
Other, n.e.c	10	<	(nc)
Technicians	40	.1	(nc)
All other engineering technicians	40	.1	(nc)
Cutlery, hand tools, and hardware (SIC 3420):			
Scientific and technical personnel	1,430	1.1	(nc)
Scientists	310	.2	(nc)
Physical scientists	220	.2	0
Life scientists	80	.1	0
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	160	.1	1
Engineers	410	.3	(nc)
Computer	30	<	75
Electrical/electronics	60	<	32
Industrial	30	<	0
Mechanical	220	.2	9
Metallurgical/metallurgists	20	<	0
Other, n.e.c	50	<	(nc)
Technicians	550	.4	(nc)
Drafters	240	.2	2
Electrical/electronics engineering technicians	100	.1	14
Mechanical engineering technicians	30	<	14
All other engineering technicians	70	<	(nc)
Physical and life science technicians	110	.1	0
Plumbing and heating, except electric (SIC 3430):			
Scientific and technical personnel	260	.4	(nc)
Managers of scientific and technical personnel	60	.1	3
Engineers	100	.2	(nc)
Electrical/electronics	20	<	0
Mechanical	60	.1	13
Other, n.e.c	20	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Plumbing and heating, except electric (SIC 3430) — continued:			
Technicians	100	0.2	(nc)
Drafters	30	<	6
Mechanical engineering technicians	40	.1	0
All other engineering technicians	30	<	(nc)
Fabricated structural metal products (SIC 3440):			
Scientific and technical personnel	530	.1	(nc)
Managers of scientific and technical personnel	100	<	20
Engineers	190	<	(nc)
Mechanical	110	<	16
Metallurgical/metallurgists	20	.0	31
Other, n.e.c	60	<	(nc)
Technicians	240	<	(nc)
Drafters	220	<	27
Mechanical engineering technicians	10	.0	20
All other engineering technicians	10	.0	(nc)
Screw machine products, bolts, etc. (SIC 3450):			
Scientific and technical personnel	190	.2	(nc)
Managers of scientific and technical personnel	40	<	0
Engineers	90	.1	(nc)
Industrial	10	.0	0
Mechanical	60	.1	8
Other, n.e.c	20	<	(nc)
Technicians	60	<	(nc)
Drafters	20	<	0
Mechanical engineering technicians	40	<	1
Metal forgings and stampings (SIC 3460):			
Scientific and technical personnel	390	.2	(nc)
Scientists	10	.0	(nc)
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	80	<	32
Engineers	160	.1	(nc)
Mechanical	90	<	15
Other, n.e.c	70	<	(nc)
Technicians	140	<	(nc)
Computer programmers	20	<	65
Drafters	20	<	20
Mechanical engineering technicians	20	.0	5
All other engineering technicians	80	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Metal services, nec (SIC 3470):			
Scientific and technical personnel	150	0.1	(nc)
Scientists	30	<	(nc)
Physical scientists	30	<	34
Managers of scientific and technical personnel	20	<	0
Engineers	70	<	(nc)
Mechanical	20	<	7
Metallurgical/metallurgists	30	<	33
Other, n.e.c	20	<	(nc)
Technicians	30	<	(nc)
Drafters	10	.0	27
All other engineering technicians	20	<	(nc)
Ordnance and accessories, nec (SIC 3480):			
Scientific and technical personnel	440	.6	(nc)
Scientists	80	.1	(nc)
Physical scientists	70	.1	0
Life scientists	10	<	0
Managers of scientific and technical personnel	40	<	0
Engineers	250	.4	(nc)
Mechanical	60	.1	5
Other, n.e.c	190	.3	(nc)
Technicians	70	.1	(nc)
Drafters	10	<	0
All other engineering technicians	20	<	(nc)
Physical and life science technicians	40	<	0
Misc. fabricated metal products (SIC 3490):			
Scientific and technical personnel	800	.3	(nc)
Scientists	30	.0	(nc)
Physical scientists	20	.0	22
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	180	.1	11
Engineers	360	.1	(nc)
Computer	20	.0	31
Electrical/electronics	30	<	0
Industrial	10	.0	10
Mechanical	250	.1	8
Metallurgical/metallurgists	30	<	29
Safety	10	.0	0
Other, n.e.c	10	.0	(nc)
Technicians	230	.1	(nc)
Drafters	110	<	12

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Misc. fabricated metal products (SIC 3490) — continued:			
Technicians — continued			
Electrical/electronics engineering technicians	30	<	4
Mechanical engineering technicians	80	<	4
All other engineering technicians	10	.0	(nc)
Engines and turbines (SIC 3510):			
Scientific and technical personnel	590	.6	(nc)
Managers of scientific and technical personnel	70	.1	0
Engineers	300	.3	(nc)
Electrical/electronics	40	<	0
Mechanical	180	.2	0
Other, n.e.c	80	.1	(nc)
Technicians	220	.2	(nc)
Drafters	50	.1	0
Electrical/electronics engineering technicians	90	.1	0
All other engineering technicians	80	.1	(nc)
Farm and garden machinery (SIC 3520):			
Scientific and technical personnel	710	.7	(nc)
Scientists	10	.0	(nc)
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	110	.1	8
Engineers	380	.4	(nc)
Agricultural	140	.2	2
Computer	10	<	68
Industrial	30	<	48
Mechanical	70	.1	36
Other, n.e.c	130	.1	(nc)
Technicians	210	.2	(nc)
Computer programmers	10	.0	26
Drafters	110	.1	26
Electrical/electronics engineering technicians	10	<	10
Mechanical engineering technicians	30	<	20
All other engineering technicians	50	<	(nc)
Construction and related machinery (SIC 3530):			
Scientific and technical personnel	2,360	1.1	(nc)
Scientists	90	<	(nc)
Physical scientists	50	<	0
Computer analysts	40	<	(nc)
Managers of scientific and technical personnel	500	.2	24
Engineers	1,140	.5	(nc)
Electrical/electronics	270	.1	8

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Construction and related machinery (SIC 3530) — continued:			
Engineers — continued			
Industrial	20	0.0	27
Mechanical	580	.3	9
Metallurgical/metallurgists	20	.0	66
Other, n.e.c	250	.1	(nc)
Technicians	630	.3	(nc)
Drafters	200	.1	6
Electrical/electronics engineering technicians	100	<	25
Mechanical engineering technicians	160	.1	4
All other engineering technicians	30	<	(nc)
Chemical technicians, except health	140	.1	30
Metalworking machinery (SIC 3540):			
Scientific and technical personnel	1,100	.3	(nc)
Scientists	20	.0	0
Computer analysts	20	.0	0
Managers of scientific and technical personnel	150	<	9
Engineers	530	.1	(nc)
Computer	40	<	18
Electrical/electronics	130	<	10
Industrial	50	<	1
Mechanical	260	.1	18
Metallurgical/metallurgists	30	.0	0
Other, n.e.c	20	.0	(nc)
Technicians	400	.1	(nc)
Computer programmers	20	.0	51
Drafters	220	.1	21
Electrical/electronics engineering technicians	80	<	10
Mechanical engineering technicians	50	<	0
All other engineering technicians	30	<	(nc)
Special industry machinery (SIC 3550):			
Scientific and technical personnel	2,700	1.7	(nc)
Scientists	70	<	(nc)
All other mathematicians	10	.0	0
Physical scientists	50	<	30
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	550	.4	7
Engineers	1,510	1.0	(nc)
Chemical	70	<	3
Computer	280	.2	3
Electrical/electronics	400	.3	7
Industrial	40	<	21
Mechanical	650	.4	3
Other, n.e.c	70	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Special industry machinery (SIC 3550) — continued:			
Technicians	570	0.3	(nc)
Computer programmers	10	0	22
Drafters	190	1	10
Electrical/electronics engineering technicians	130	1	8
Mechanical engineering technicians	110	1	2
All other engineering technicians	60	<	(nc)
Chemical technicians, except health	50	<	5
All other physical and life science technicians	20	<	(nc)
General industrial machinery (SIC 3560):			
Scientific and technical personnel	1,440	.5	(nc)
Scientists	40	.0	(nc)
Physical scientists	20	.0	23
Computer analysts	20	.0	(nc)
Managers of scientific and technical personnel	350	1	12
Engineers	730	.3	(nc)
Chemical	60	<	29
Computer	60	<	61
Electrical/electronics	170	1	16
Industrial	40	<	23
Mechanical	330	1	12
Metallurgical/metallurgists	10	.0	43
Other, n.e.c	60	<	(nc)
Technicians	320	.1	(nc)
Drafters	70	<	8
Electrical/electronics engineering technicians	100	<	32
Mechanical engineering technicians	100	<	17
All other engineering technicians	30	.0	(nc)
Chemical technicians, except health	20	.0	15
Computer and office equipment (SIC 3570):			
Scientific and technical personnel	26,580	6.3	(nc)
Scientists	1,710	.4	(nc)
Operations and systems researchers and analysts	20	0	0
Physical scientists	10	.0	41
Computer analysts	1,680	.4	<
Managers of scientific and technical personnel	3,740	.9	7
Engineers	14,540	3.5	(nc)
Computer	6,250	1.5	5
Electrical/electronics	6,940	1.7	20
Industrial	40	<	0
Mechanical	770	.2	2
Other, n.e.c	540	.1	(nc)
Technicians	6,590	1.6	(nc)
Computer programmers	4,160	1.0	4

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Computer and office equipment (SIC 3570) — continued:			
Technicians — continued			
Drafters	510	0.1	6
Electrical/electronics engineering technicians	1,430	.3	8
Mechanical engineering technicians	220	<	68
All other engineering technicians	200	<	(nc)
All other physical and life science technicians	70	<	(nc)
Refrigeration and service machinery (SIC 3580):			
Scientific and technical personnel	1,050	.5	(nc)
Scientists	20	.0	(nc)
Physical scientists	10	.0	42
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	170	.1	6
Engineers	480	.2	(nc)
Computer	10	.0	16
Electrical/electronics	230	.1	8
Industrial	10	.0	22
Mechanical	200	.1	20
Other, n.e.c	30	<	(nc)
Technicians	380	.2	(nc)
Drafters	130	.1	9
Electrical/electronics engineering technicians	90	<	6
Mechanical engineering technicians	90	<	6
All other engineering technicians	50	<	(nc)
All other physical and life science technicians	20	<	(nc)
Industrial machinery, nec (SIC 3590):			
Scientific and technical personnel	1,100	.3	(nc)
Managers of scientific and technical personnel	200	.1	35
Engineers	530	.2	(nc)
Civil	20	.0	0
Electrical/electronics	110	<	18
Industrial	40	<	13
Mechanical	300	.1	27
Metallurgical/metallurgists	10	.0	0
Other, n.e.c	50	<	(nc)
Technicians	370	.1	(nc)
Computer programmers	60	<	55
Drafters	130	<	26
Electrical/electronics engineering technicians	90	<	0
Mechanical engineering technicians	70	<	11
All other engineering technicians	20	.0	(nc)
Electric distribution equipment (SIC 3610):			
Scientific and technical personnel	660	.7	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Electric distribution equipment (SIC 3610) — continued:			
Scientists	20	<	(nc)
All other physical scientists	20	<	(nc)
Managers of scientific and technical personnel	140	.2	14
Engineers	300	.3	(nc)
Computer	30	<	30
Electrical/electronics	220	.2	5
Mechanical	40	<	9
Other, n.e.c	10	<	(nc)
Technicians	200	.2	(nc)
Computer programmers	20	<	27
Drafters	40	<	0
Electrical/electronics engineering technicians	110	.1	3
All other engineering technicians	10	<	(nc)
All other physical and life science technicians	20	<	(nc)
Electrical industrial apparatus (SIC 3620):			
Scientific and technical personnel	1,160	.6	(nc)
Scientists	20	<	(nc)
Computer analysts	20	<	(nc)
Managers of scientific and technical personnel	190	.1	12
Engineers	670	.4	(nc)
Chemical	10	.0	15
Computer	80	<	40
Electrical/electronics	490	.3	10
Mechanical	70	<	22
Metallurgical/metallurgists	10	.0	0
Other, n.e.c	10	.0	(nc)
Technicians	280	.1	(nc)
Drafters	80	<	21
Electrical/electronics engineering technicians	130	.1	15
Mechanical engineering technicians	20	<	0
All other engineering technicians	40	<	(nc)
All other physical and life science technicians	10	.0	(nc)
Household appliances (SIC 3630):			
Scientific and technical personnel	530	.4	(nc)
Scientists	10	.0	(nc)
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	80	.1	3
Engineers	220	.2	(nc)
Electrical/electronics	60	<	0
Mechanical	140	.1	0
Other, n.e.c	20	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Household appliances (SIC 3630) — continued:			
Technicians	220	0.2	(nc)
Drafters	90	.1	0
Electrical/electronics engineering technicians	30	<	0
Mechanical engineering technicians	70	<	0
All other engineering technicians	30	<	(nc)
Electric lighting and wiring equipment (SIC 3640):			
Scientific and technical personnel	840	.4	(nc)
Scientists	20	.0	(nc)
All other physical scientists	20	.0	(nc)
Managers of scientific and technical personnel	150	.1	9
Engineers	440	.2	(nc)
Chemical	30	<	46
Computer	10	.0	33
Electrical/electronics	160	.1	11
Industrial	10	.0	2
Mechanical	90	<	17
Metallurgical/metallurgists	50	<	31
Other, n.e.c	90	<	(nc)
Technicians	230	.1	(nc)
Drafters	60	<	28
Electrical/electronics engineering technicians	70	<	10
Mechanical engineering technicians	50	<	0
All other engineering technicians	30	<	(nc)
Chemical technicians, except health	20	<	67
Household audio and video equipment (SIC 3650):			
Scientific and technical personnel	710	.8	(nc)
Managers of scientific and technical personnel	150	.2	19
Engineers	470	.6	(nc)
Computer	30	<	18
Electrical/electronics	210	.2	6
Industrial	10	<	0
Other, n.e.c	220	.3	(nc)
Technicians	90	.1	(nc)
Drafters	40	<	7
Electrical/electronics engineering technicians	40	<	0
All other engineering technicians	10	.0	(nc)
Communication equipment (SIC 3660):			
Scientific and technical personnel	6,860	2.6	(nc)
Scientists	150	<	(nc)
All other physical scientists	20	.0	(nc)
Computer analysts	130	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Communication equipment (SIC 3660) — continued:			
Managers of scientific and technical personnel	670	0.3	14
Engineers	4,580	1.8	(nc)
Computer	740	.3	17
Electrical/electronics	2,420	1.0	9
Industrial	70	<	32
Mechanical	220	.1	29
Metallurgical/metallurgists	10	.0	19
Other, n.e.c	1,120	.4	(nc)
Technicians	1,460	.6	(nc)
Computer programmers	400	.2	0
Drafters	280	.1	14
Electrical/electronics engineering technicians	660	.3	6
Mechanical engineering technicians	20	.0	0
All other engineering technicians	90	<	(nc)
Chemical technicians, except health	10	.0	15
Electronic components and accessories (SIC 3670):			
Scientific and technical personnel	6,210	1.1	(nc)
Scientists	280	<	(nc)
Chemists	130	<	56
Physicists and astronomers	20	.0	58
All other physical scientists	10	.0	(nc)
Computer analysts	120	<	(nc)
Managers of scientific and technical personnel	870	.2	10
Engineers	3,760	.7	(nc)
Chemical	320	.1	79
Computer	560	.1	9
Electrical/electronics	2,140	.4	5
Industrial	70	<	79
Mechanical	170	<	6
Metallurgical/metallurgists	220	<	25
Other, n.e.c	280	<	(nc)
Technicians	1,300	.2	(nc)
Drafters	150	<	4
Electrical/electronics engineering technicians	920	.2	5
Mechanical engineering technicians	70	<	0
All other engineering technicians	120	<	(nc)
Chemical technicians, except health	40	.0	18
Misc. electrical equipment & supplies (SIC 3690):			
Scientific and technical personnel	1,200	.7	(nc)
Scientists	40	<	(nc)
Chemists	40	<	0
Managers of scientific and technical personnel	220	.1	12

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Misc. electrical equipment & supplies (SIC 3690) — continued:			
Engineers	620	0.4	(nc)
Chemical	20	<	0
Computer	40	<	0
Electrical/electronics	360	.2	3
Industrial	20	<	0
Mechanical	100	.1	1
Other, n.e.c	80	<	(nc)
Technicians	320	.2	(nc)
Drafters	50	<	7
Electrical/electronics engineering technicians	130	.1	5
Mechanical engineering technicians	40	<	2
All other engineering technicians	60	<	(nc)
All other physical and life science technicians	40	<	(nc)
Motor vehicles and equipment (SIC 3710):			
Scientific and technical personnel	11,150	1.2	(nc)
Scientists	480	<	(nc)
All other mathematicians	210	<	(nc)
Physical scientists	110	<	0
Computer analysts	160	<	(nc)
Managers of scientific and technical personnel	570	.1	4
Engineers	7,270	.8	(nc)
Chemical	10	0	4
Computer	50	0	0
Electrical/electronics	360	<	2
Mechanical	2,600	.3	2
Metallurgical/metallurgists	50	0	0
Other, n.e.c	4,200	.5	(nc)
Technicians	2,830	.3	(nc)
Electrical/electronics engineering technicians	140	<	2
All other engineering technicians	2,680	.3	(nc)
Physical and life science technicians	10	0	0
Aircraft and parts (SIC 3720):			
Scientific and technical personnel	4,930	.7	(nc)
Scientists	120	0	(nc)
All other mathematicians	30	0	(nc)
Physical scientists	40	0	0
Computer analysts	50	0	16
Managers of scientific and technical personnel	580	.1	11
Engineers	3,500	.5	(nc)
Aeronautical	2,270	.4	15
Computer	90	<	2
Electrical/electronics	480	.1	27
Industrial	10	0	0

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Aircraft and parts (SIC 3720) — continued:			
Engineers — continued			
Mechanical	280	<	15
Metallurgical/metallurgists	230	<	6
Other, n.e.c	140	<	(nc)
Technicians	730	.1	(nc)
Computer programmers	60	.0	65
Drafters	80	<	48
All other engineering technicians	590	.1	(nc)
Ship and boat building and repairing (SIC 3730):			
Scientific and technical personnel	180	.1	(nc)
Managers of scientific and technical personnel	30	<	4
Engineers	100	<	(nc)
Marine	30	<	0
Mechanical	20	<	0
Other, n.e.c	50	<	(nc)
Technicians	50	<	(nc)
Drafters	40	<	0
All other engineering technicians	10	.0	(nc)
Railroad equipment (SIC 3740):			
Scientific and technical personnel	30	.1	(nc)
Engineers	10	<	(nc)
Mechanical	10	<	0
Technicians	20	<	(nc)
Drafters	10	<	0
All other engineering technicians	10	<	(nc)
Motorcycles, bicycles, and parts (SIC 3750):			
Scientific and technical personnel	130	.7	(nc)
Scientists	10	<	(nc)
Computer analysts	10	<	(nc)
Managers of scientific and technical personnel	20	1	0
Engineers	60	.3	(nc)
Mechanical	50	.3	0
Other, n.e.c	10	<	(nc)
Technicians	40	.2	(nc)
Drafters	20	.1	22
All other engineering technicians	20	.1	(nc)
Guided missiles, space vehicles, parts (SIC 3760):			
Scientific and technical personnel	8,580	5.6	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Guided missiles, space vehicles, parts (SIC 3760) — continued:			
Scientists	990	0.6	(nc)
All other mathematicians	260	.2	(nc)
Physical scientists	440	.3	22
Life scientists	10	.0	0
Computer analysts	280	.2	(nc)
Managers of scientific and technical personnel	540	.4	4
Engineers	5,890	3.8	(nc)
Aeronautical	1,040	.7	0
Chemical	160	.1	0
Computer	570	.4	4
Electrical/electronics	660	.4	0
Industrial	70	<	0
Mechanical	1,350	.9	2
Metallurgical/metallurgists	170	.1	0
Other, n.e.c	1,870	1.2	(nc)
Technicians	1,160	.7	(nc)
Computer programmers	400	.3	13
Drafters	50	<	30
Electrical/electronics engineering technicians	180	.1	0
Mechanical engineering technicians	240	.2	1
All other engineering technicians	120	.1	(nc)
Physical and life science technicians	170	.1	0
Miscellaneous transportation equipment (SIC 3790):			
Scientific and technical personnel	150	.3	(nc)
Managers of scientific and technical personnel	40	.1	10
Engineers	50	.1	(nc)
Mechanical	30	<	22
Other, n.e.c	20	<	(nc)
Technicians	60	.1	(nc)
Drafters	30	.1	0
Electrical/electronics engineering technicians	10	<	0
All other engineering technicians	20	<	(nc)
Search and navigation equipment (SIC 3810):			
Scientific and technical personnel	8,160	3.3	(nc)
Scientists	700	.3	(nc)
All other physical scientists	100	<	(nc)
Computer analysts	600	.2	(nc)
Managers of scientific and technical personnel	980	.4	1
Engineers	5,020	2.0	(nc)
Computer	320	.1	9
Electrical/electronics	3,550	1.4	3
Mechanical	510	.2	9

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Search and navigation equipment (SIC 3810) — continued:			
Engineers — continued			
Other, n.e.c	640	0.3	(nc)
Technicians	1,460	.6	(nc)
Drafters	180	.1	11
Electrical/electronics engineering technicians	720	.3	10
Mechanical engineering technicians	210	.1	6
All other engineering technicians	240	.1	(nc)
All other physical and life science technicians	110	<	(nc)
Measuring and controlling devices (SIC 3820):			
Scientific and technical personnel	14,410	4.6	(nc)
Scientists	760	.2	(nc)
Chemists	250	.1	10
All other physical scientists	90	<	(nc)
Life scientists	300	.1	2
Computer analysts	120	<	(nc)
Managers of scientific and technical personnel	1,410	.4	10
Engineers	9,790	3.1	(nc)
Chemical	110	<	13
Computer	830	.3	5
Electrical/electronics	7,200	2.3	6
Industrial	80	<	2
Mechanical	1,080	.3	8
Other, n.e.c	490	.2	(nc)
Technicians	2,450	.8	(nc)
Computer programmers	540	.2	20
Drafters	480	.2	10
Electrical/electronics engineering technicians	940	.3	9
Mechanical engineering technicians	170	<	32
All other engineering technicians	180	<	(nc)
Chemical technicians, except health	140	<	13
Medical instruments and supplies (SIC 3840):			
Scientific and technical personnel	8,360	2.8	(nc)
Scientists	1,090	.4	(nc)
Chemists	250	.1	7
All other physical scientists	20	.0	(nc)
Life scientists	780	.3	7
Computer analysts	40	<	(nc)
Managers of scientific and technical personnel	1,280	.4	3
Engineers	3,880	1.3	(nc)
Chemical	100	<	0
Computer	630	.2	8
Electrical/electronics	1,490	.5	9
Industrial	160	<	0

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Medical instruments and supplies (SIC 3840) — continued:			
Engineers — continued			
Mechanical	1,040	0.4	8
Other, n.e.c	460	.2	(nc)
Technicians	2,110	.7	(nc)
Computer programmers	140	<	25
Drafters	390	.1	4
Electrical/electronics engineering technicians	570	.2	9
Mechanical engineering technicians	430	.1	7
All other engineering technicians	160	<	(nc)
Chemical technicians, except health	360	.1	2
All other physical and life science technicians	60	<	(nc)
Ophthalmic goods (SIC 3850):			
Scientific and technical personnel	240	.6	(nc)
Scientists	20	.1	(nc)
Chemists	20	.1	3
Managers of scientific and technical personnel	20	<	0
Engineers	100	.2	(nc)
Chemical	30	.1	9
Electrical/electronics	10	<	0
Industrial	10	<	21
Mechanical	30	.1	12
Other, n.e.c	20	<	(nc)
Technicians	100	.2	(nc)
Drafters	20	<	20
Electrical/electronics engineering technicians	10	<	0
Mechanical engineering technicians	10	<	0
All other engineering technicians	20	.1	(nc)
All other physical and life science technicians	40	.1	(nc)
Photographic equipment and supplies (SIC 3860):			
Scientific and technical personnel	1,890	1.9	(nc)
Scientists	300	.3	(nc)
Chemists	300	.3	0
Managers of scientific and technical personnel	200	.2	12
Engineers	690	.7	(nc)
Chemical	200	.2	<
Computer	160	.2	41
Electrical/electronics	190	.2	12
Mechanical	120	.1	11
Other, n.e.c	20	<	(nc)
Technicians	700	.7	(nc)
Computer programmers	50	<	40
Drafters	20	<	0

See explanatory information, if any, and SOURCE at end of table

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

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Industry and occupation	Total	Percentage of total industry employment	Relative error
Photographic equipment and supplies (SIC 3860) — continued:			
Technicians — continued			
Electrical/electronics engineering technicians	90	0.1	19
Mechanical engineering technicians	40	<	59
All other engineering technicians	20	<	(nc)
Chemical technicians, except health	470	.5	0
All other physical and life science technicians	10	.0	(nc)
Watches, clocks, watchcases & parts (SIC 3870):			
Scientific and technical personnel	40	.3	(nc)
Managers of scientific and technical personnel	20	.2	0
Engineers	10	.1	(nc)
Other, n.e.c	10	.1	(nc)
Technicians	10	.1	(nc)
All other engineering technicians	10	.1	(nc)
Jewelry, silverware, and plated ware (SIC 3910):			
Scientific and technical personnel	10	<	(nc)
Engineers	10	<	(nc)
Other, n.e.c	10	<	(nc)
Musical instruments (SIC 3930):			
Scientific and technical personnel	60	.5	(nc)
Engineers	10	.1	(nc)
Other, n.e.c	10	.1	(nc)
Technicians	50	.3	(nc)
Drafters	20	.1	10
All other engineering technicians	30	.2	(nc)
Toys and sporting goods (SIC 3940):			
Scientific and technical personnel	430	.3	(nc)
Scientists	30	<	(nc)
Physical scientists	20	<	10
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	110	.1	6
Engineers	120	.1	(nc)
Industrial	20	<	22
Mechanical	40	<	0
Other, n.e.c	60	<	(nc)
Technicians	170	.1	(nc)
Computer programmers	10	0	0
Drafters	70	.1	6
Mechanical engineering technicians	20	<	0
All other engineering technicians	30	<	(nc)

See explanatory information, if any, and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in manufacturing industries as a percentage of total industry employment, and the relative error: 1992

Industry and occupation	Total	Percentage of total industry employment	Relative error
Toys and sporting goods (SIC 3940) — continued:			
Technicians — continued			
Physical and life science technicians	40	<	0
Pens, pencils, office, & art supplies (SIC 3950):			
Scientific and technical personnel	260	.7	(nc)
Scientists	60	.2	(nc)
Physical scientists	60	.2	1
Managers of scientific and technical personnel	40	.1	0
Engineers	60	.2	(nc)
Mechanical	60	.2	0
Technicians	100	.3	(nc)
Drafters	30	.1	0
All other engineering technicians	40	.1	(nc)
Physical and life science technicians	30	.1	0
Costume jewelry and notions (SIC 3960):			
Scientific and technical personnel	10	<	(nc)
Technicians	10	<	(nc)
All other engineering technicians	10	<	(nc)
Miscellaneous manufactures (SIC 3990):			
Scientific and technical personnel	210	.1	(nc)
Scientists	10	<	(nc)
Computer analysts	10	<	(nc)
Managers of scientific and technical personnel	50	<	4
Engineers	80	<	(nc)
Mechanical	50	<	11
Other, n.e.c	30	<	(nc)
Technicians	70	<	(nc)
Drafters	20	<	8
Mechanical engineering technicians	10	.0	39
All other engineering technicians	30	<	(nc)
Physical and life science technicians	10	<	0

NOTE: Because of rounding, components may not add to totals.

KEY: nc = not computed
< = The estimated actual value is less than 50 for numbers and less than 0.05 for percents.
0 = Data were collected and the reported number or value was zero.
n.e.c. = not elsewhere classified

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

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